BROCADE

Crezer
IT & TELECOM

VISION DE BROCADE

Mauricio León M.
Territory Manager, Spanish South America
Brocade Communications Systems, Inc.

Desayuno Club de Golf
29 de noviembre 2011

Agenda

- Brocade
- Visión
- Brocade One
- Portafolio de Productos
- Nuevas tecnologías.

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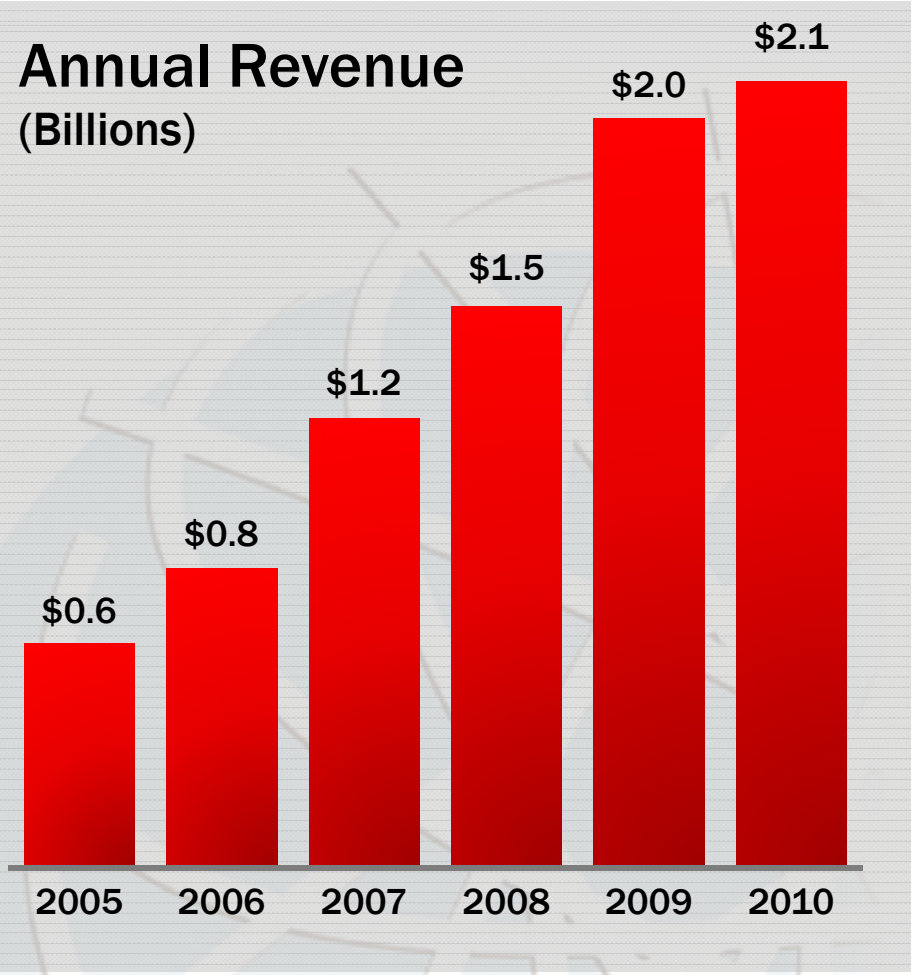
Brocade at a Glance

- Founded in 1995
- 4,700+ employees worldwide
- Headquartered in San Jose, CA
- Operating in more than 160 countries
- $2+ billion in annual revenue



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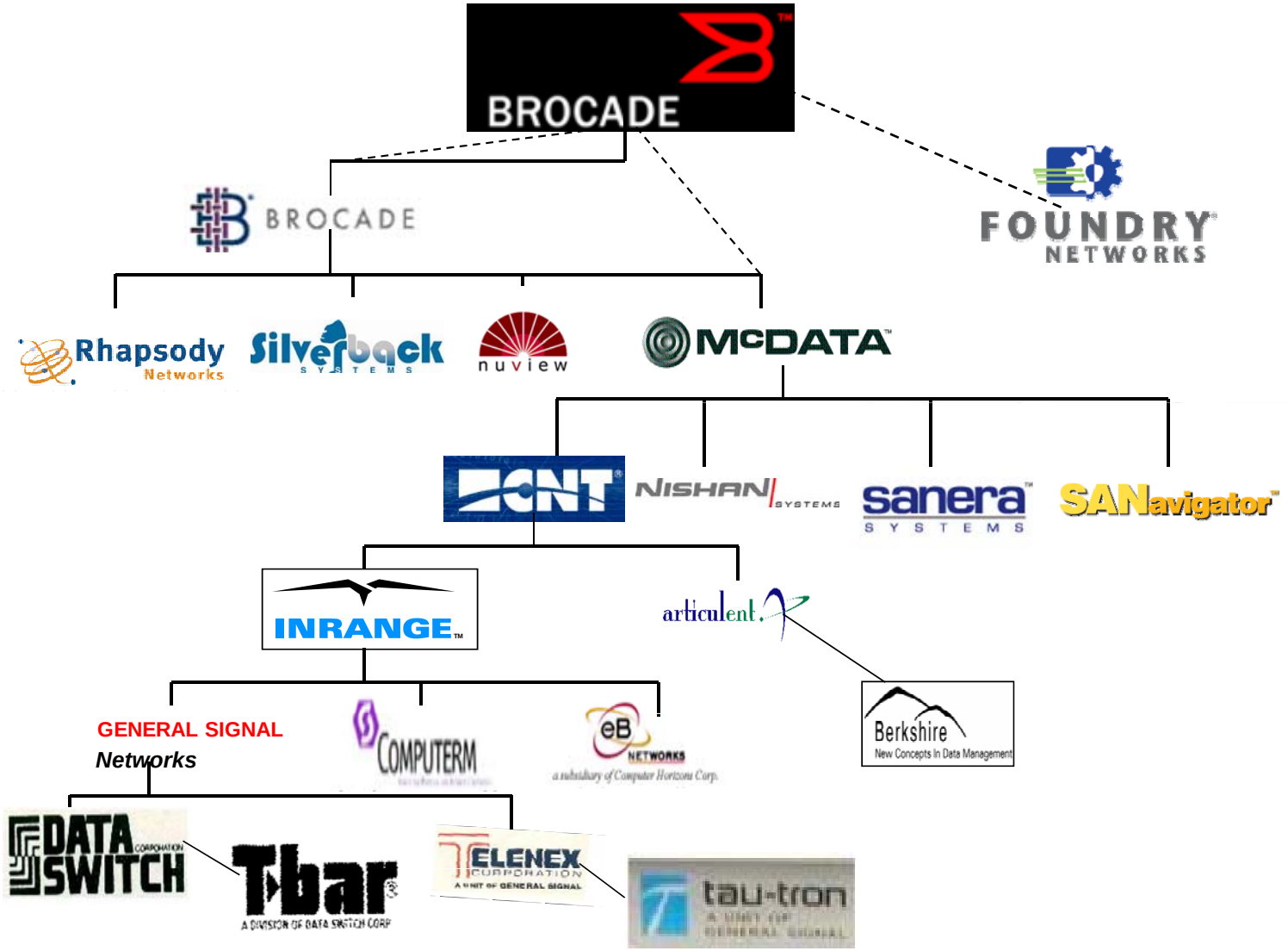
Strategic Acquisitions



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BROCADE

Acquired Foundry 2008

- Data center networking experts
- Storage networking pioneer and leader
- Approximately 70% SAN market share

- Price/performance leader in IP networks
- Powering 90% of Internet Exchange Points
- 15,000+ customers worldwide

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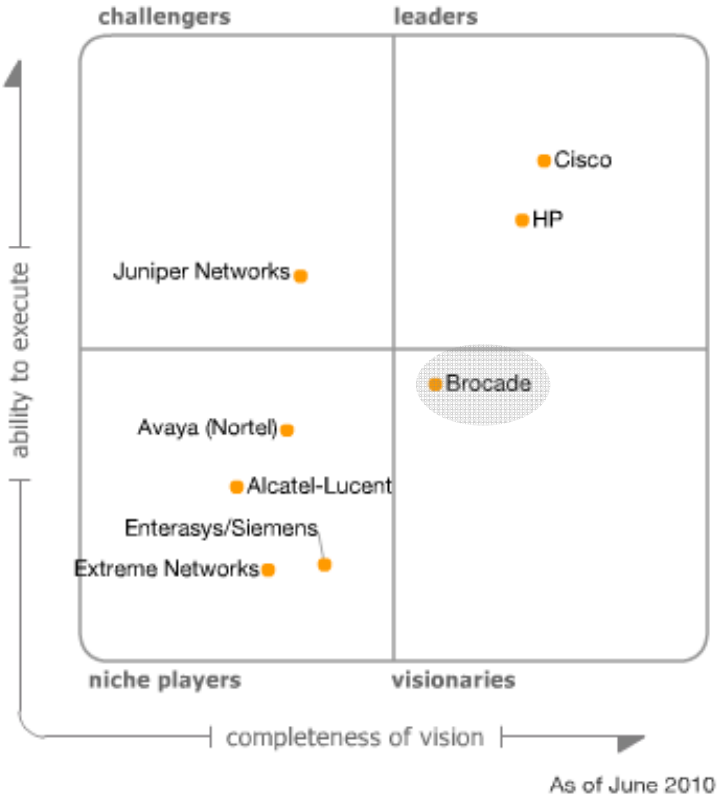
Magic Quadrant for Enterprise LAN (Global)

Publication Date: 10 June 2010



Brocade

Brocade has depth of expertise across all data center networking technologies; however, 2009 was a mixed year for the vendor. The first part of 2009 saw revenue performance exceed that of the market, though this was likely a rebound from a disappointing 2008, when Brocade's acquisition of Foundry took longer than expected. However, the last quarter of 2009 was disappointing, as revenue did not increase with the rest of the industry, and strong evidence of the integration of the classic Foundry and Brocade offerings was limited. Brocade must establish itself as a key player within the complete data center networking marketplace in 2010.

Strengths

- A strong presence in corporate data centers and the collective assets of high-end LAN switching, Fibre Channel and FCoE technologies put Brocade in a solid technology position.
- Customer support remains a strength, and Brocade's greater geographic reach and services capabilities have enhanced its capabilities during 2009.
- Converging server and storage solutions into a unified network continues to add unique differentiation, and enhances the Brocade (Foundry) advanced data center vision.

Cautions

- Although Brocade is in the process of combining its enterprise LAN solutions into a few powerful offerings, it still has a confusing portfolio of products that make it difficult for channels and partners to properly represent the product offering in the field.
- Brocade needs to continue its 2009 investments to drive more of its business through an engaged channel partner program.
- Its OEM WLAN strategy with Motorola is struck in late 2009 after changing its Meru Networks relationship from OEM to reseller. Brocade needs to quickly eliminate any confusion in the market by documenting its strategy and developing differentiating functionality, as enterprises begin to look for a converged services, rich access layer vendor.

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Brocade

Pioneer and leader in data center networking

First-to-market: SAN, 1/10/100 GbE, Ethernet fabric

90% of Global 1000 rely on Brocade data center technology

Powering 90% of Internet Exchange Points

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VIRTUALIZATION

CLOUD

CONVERGENCE

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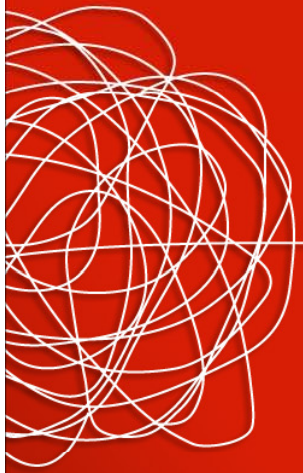

BROCADE ONE

A Unified Network Strategy and Architecture

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Leading Through Innovation

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Brocade One Strategy

Unmatched Simplicity
Unified management domain

Non-stop Networking
Resiliency without redundancy

Application Optimization
Low latency, deterministic

Investment Protection
Open extensible IT sourcing

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Brocade One is…

- Highest density 100 GbE
- Backbone and research networks
- Low latency solutions
- Application Delivery Solutions
- Price/performance leadership

…how Brocade enables new business models and capabilities for **service providers.**

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Brocade One is…

- High density 1 GbE and 10 GbE
- Ethernet Fabric
- Brocade Network Advisor
- Storage Area Networking
- High performance extension and encryption

…how we simplify today's advanced **data centers**.

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Brocade One is…

- Active-active mesh architectures
- Mobile backhaul
- Data center reliability, throughout the network
- Unified wired/wireless management

…why users can enjoy the benefits of their applications and **information anywhere.**

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Services You Want, How You Want

Building solutions based on your preferences

- Brocade Consultants
- Brocade Premier and Premier Plus Support
- Brocade MySupport single-source, Web-based platform
- Integrated with partner support strategies

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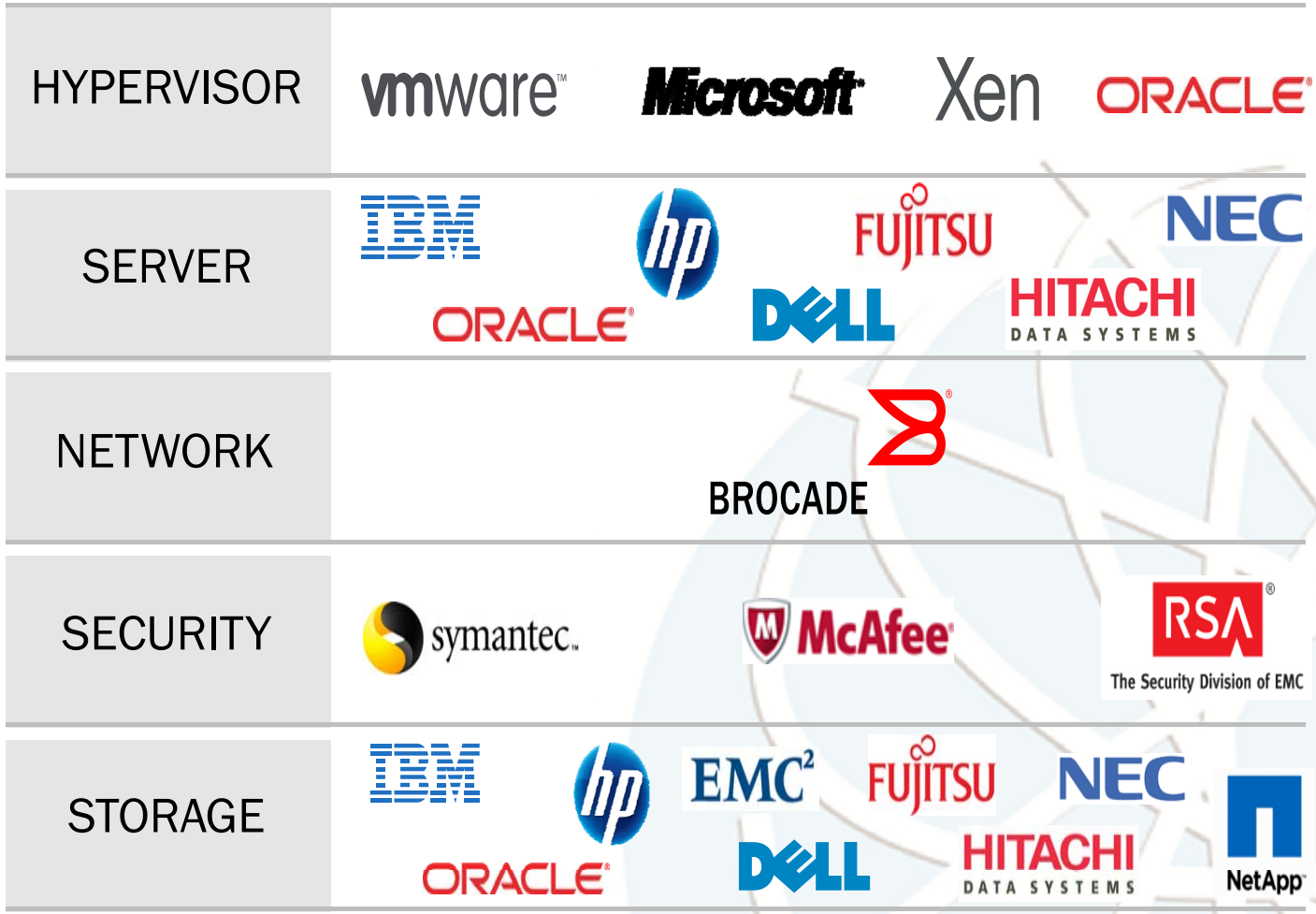
Brocade Ecosystem

The power of open solutions



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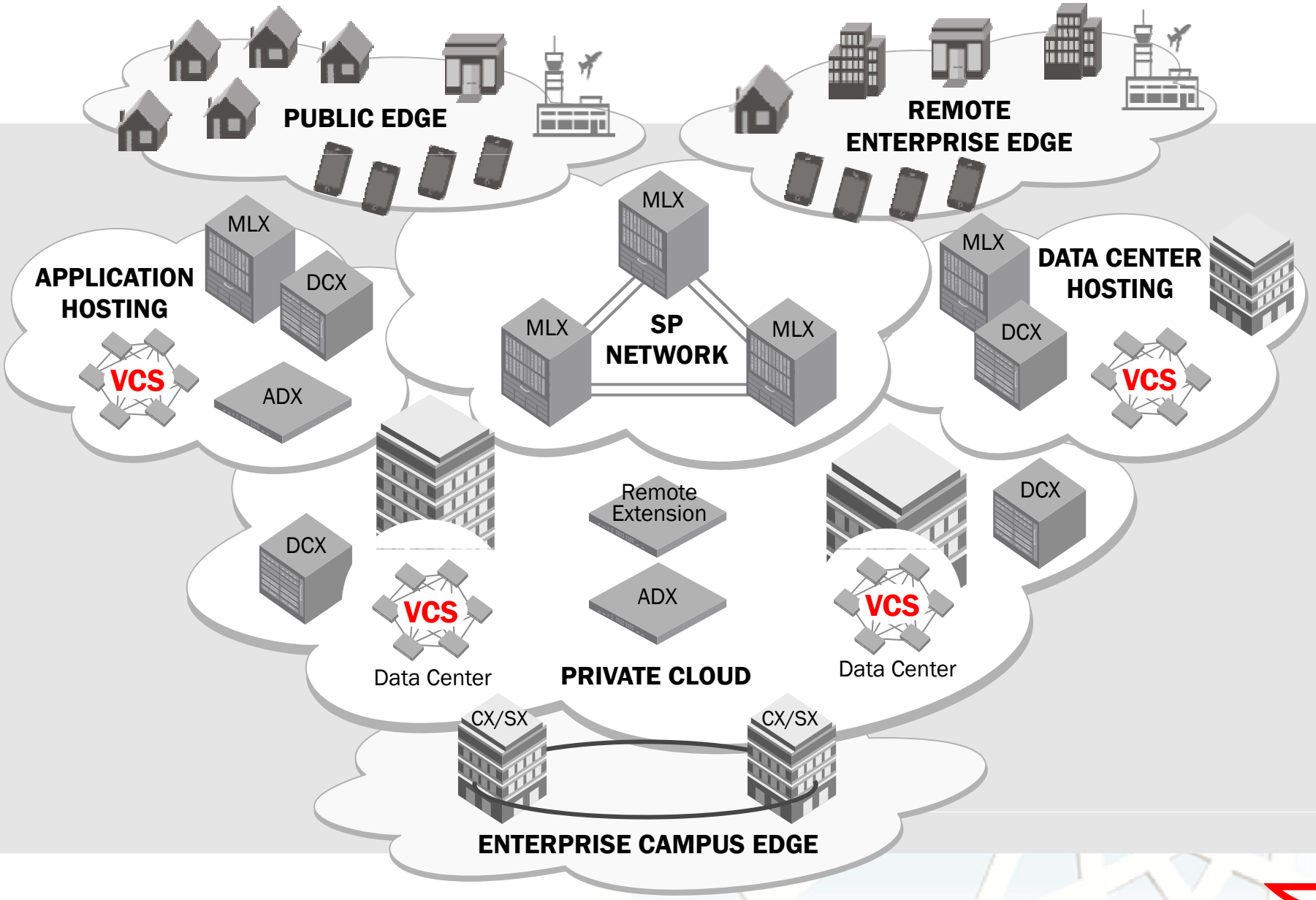
Brocade One Architecture



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BROCADE

ETHERNET FABRICS & VIRTUAL CLUSTER SWITCHING (VCS)

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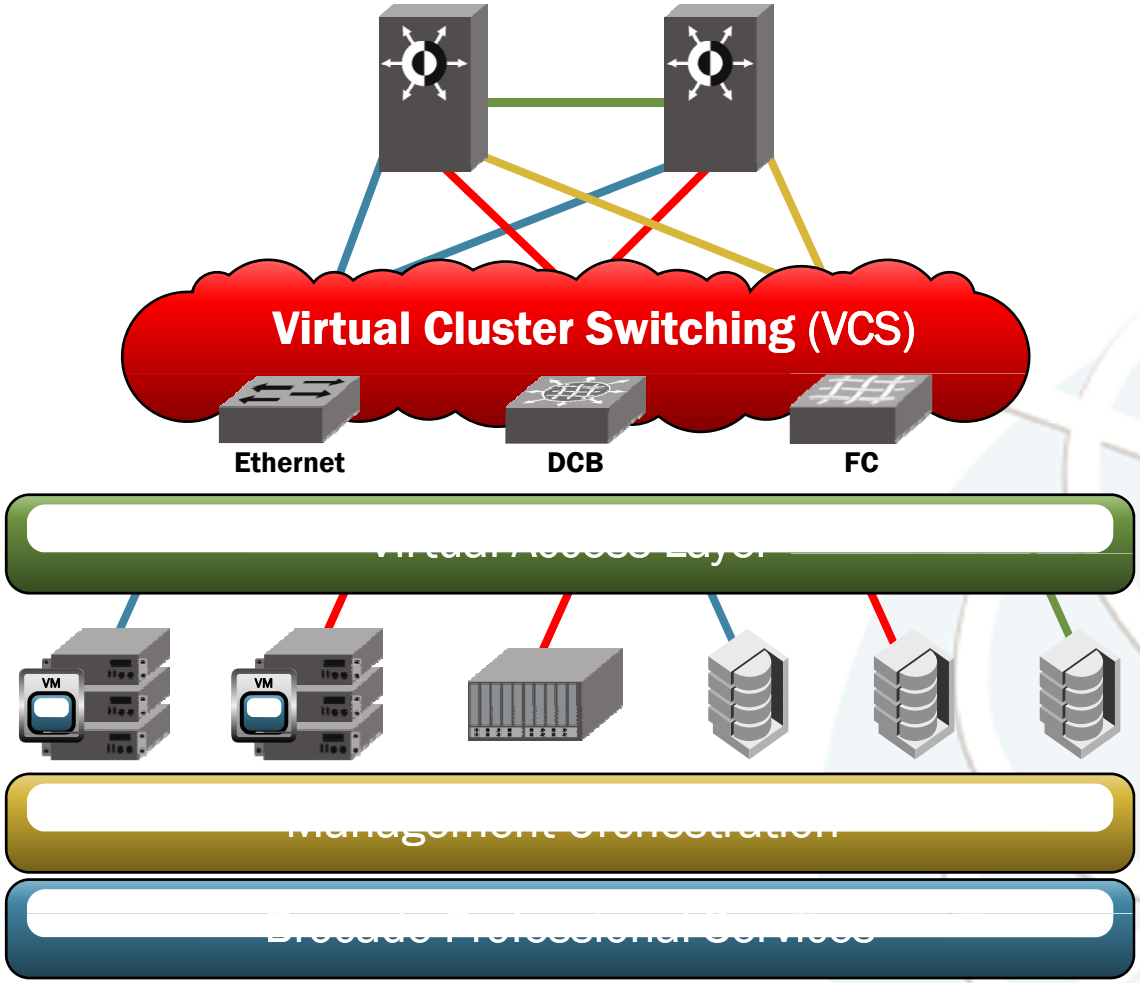
Data Center Network Vision



Collapse/simplify layered architecture

Map to application needs

Network innovation

- Revolutionize Layer 2 connectivity (VCS)
- Optimize VM performance and mobility (VAL)
- Single pane of glass management

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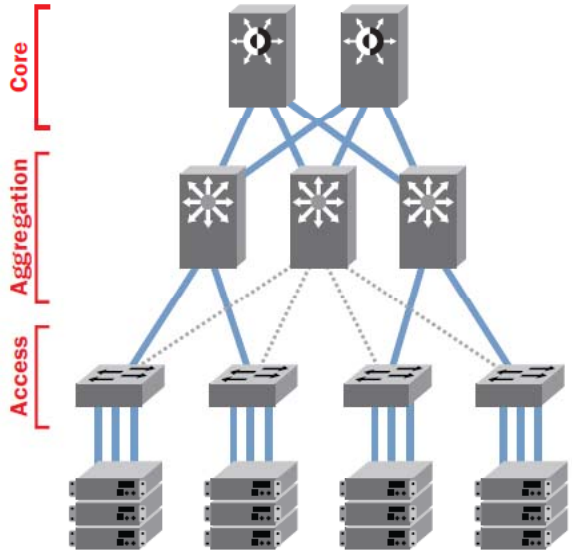
Ethernet Fabrics

A New Network Architecture

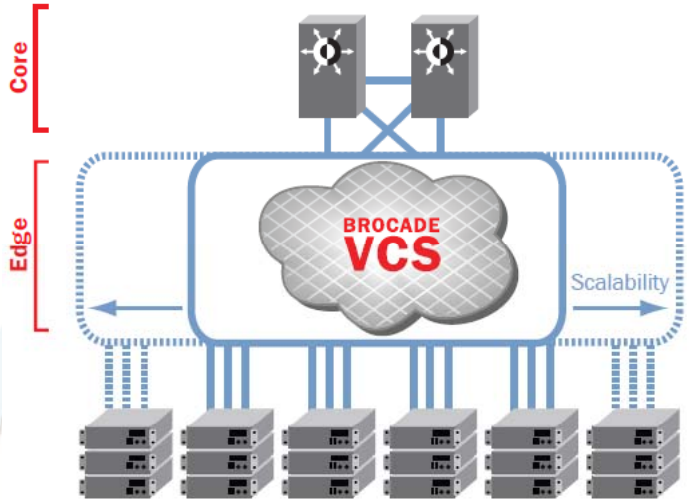
Classic Hierarchical Ethernet Architecture



Servers with 10 Gbps Connections

- Classic architectures often require three tiers in the physical network
- STP disables links in the fabric to prevent loops, limiting network utilization
- Each switch has to be managed individually

Ethernet Fabric Architecture



Servers with 10 Gbps Connections

- Fabric architectures flatten and seamlessly scale out the Layer 2 network at the edge
- All links in the VCS fabric are active and it is managed as one
- Switches in the VCS fabric are managed at one
- Based on TRILL

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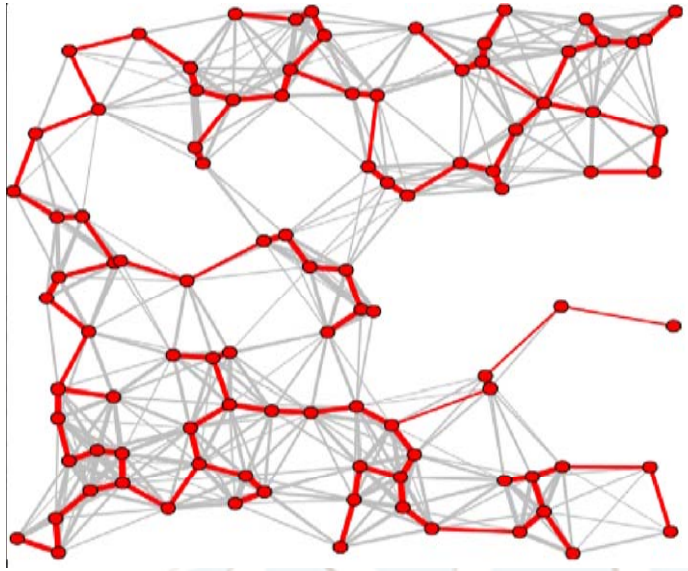
What is TRILL?

Transparent Interconnection of Lots of Links



TRILL is a new standard protocol to perform Layer 2 bridging using IS-IS link state routing.

Who invented TRILL? Radia Perlman of Intel, the inventor of the Spanning Tree Protocol, a major contributor to link-state routing, and the inventor of DECnet Phase V from which IS-IS was copied and OSPF was inspired.

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The IETF TRILL Protocol

- TRILL provides
  - transparent forwarding using optimal paths with zero configuration,
  - safe forwarding even during routing transients,
  - support for multi-pathing for unicast and multicast traffic, and
  - improved scalability.
- TRILL is an IETF protocol invented by Radia Perlman, inventor of Spanning Tree.

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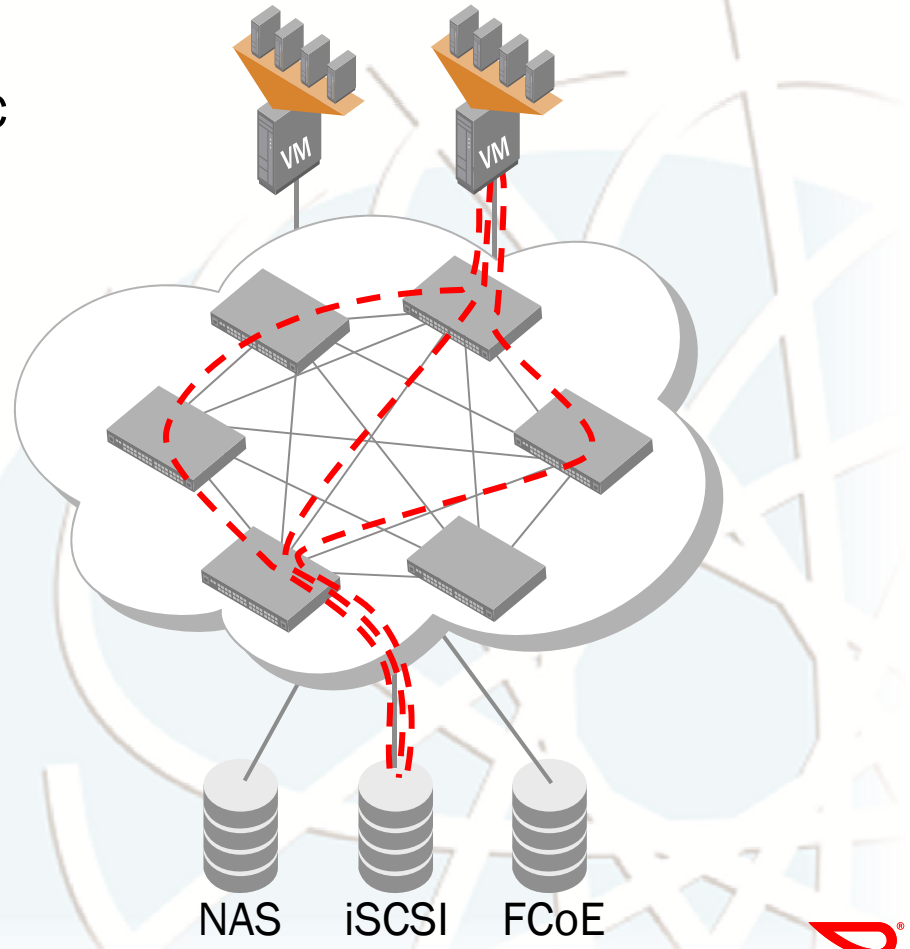
CORE TECHNOLOGY

Brocade Virtual Cluster Switching (VCS)

ETHERNET FABRIC	DISTRIBUTED INTELLIGENCE	LOGICAL CHASSIS	DYNAMIC SERVICE INSERTION

- First data center Ethernet fabric
- No Spanning Tree Protocol
- Multi-path, deterministic
- Auto-healing, non-disruptive
- Lossless, low latency
- Built for convergence



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Brocade VDX 6720 Data Center Switches

Revolutionizing the way data center networks are built

Simplifies network architectures, dramatically reduces operating expenses

Allows the virtualized data center to scale while reducing complexity and enabling seamless application mobility

Increases network performance, utilization, and resiliency with Ethernet fabrics

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Brocade VDX 6720 Data Center Switches

Product highlights

- **Built for the Virtualized Data Center**
  - Uses Brocade fabric switching ASICs
  - First switches to run new Brocade Network Operating System
  - Brocade VCS fabric technology
  - Automatic Migration of Port Profiles (AMPP)
- **Best-In-Class Performance and Density**
  - 24- and 60-port models with Ports On Demand
  - Non-blocking, cut-through architecture, wire-speed
  - 600 ns port-to-port latency; 1.8 us across port groups
- **Environmental Flexibility**
  - 10 Gb and 1 Gb supported on every port
  - Direct-attached copper, active optical, and SFP optical connectivity options
  - Less than 17" switch depth and reversible front-to-back airflow
- **Enables Network Convergence**
  - Complete FCoE support, multihop
  - iSCSI DCB support
- **Highly Resilient and Efficient Design**
  - Hot code load and activation
  - Remote Lights Out Management
  - Simplistic design, optimal power efficiency

Data Center Access

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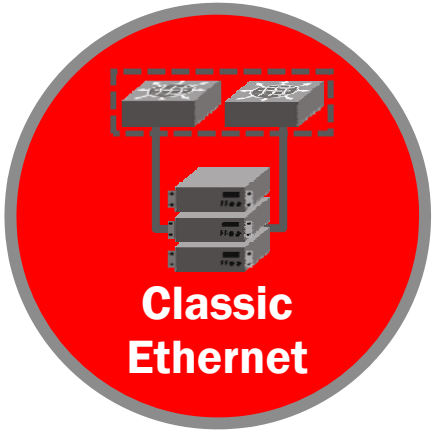
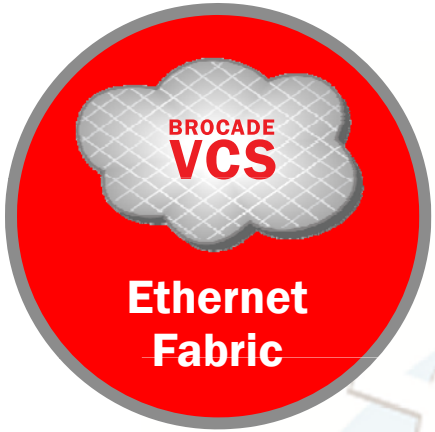
Deployments Models

Brocade VDX 6720 Switches



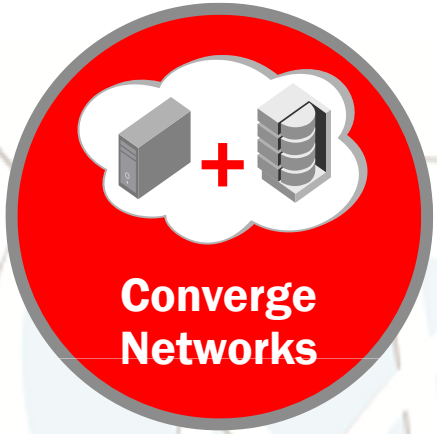
Connect to Classic Architecture

- Need: 10 GbE refresh; HPC; virtualization strategy
- New and existing Brocade or competitor network
- Value: Active-Active, HA, low latency connectivity; manage switches as one; leverage full VCS in future



Scale Virtualized Environment

- Need: scale virtualization; build the Cloud
- New and existing Brocade or competitor network
- Value: Full VCS (performance, utilization resiliency; VM mobility; management simplicity)



Converge LAN and SAN Traffic

- Need: reduce costs using common LAN/SAN network
- New and existing Brocade or competitor IP network; Brocade Fibre Channel SAN
- Value: Full VCS; less infrastructure; preserves SAN investments

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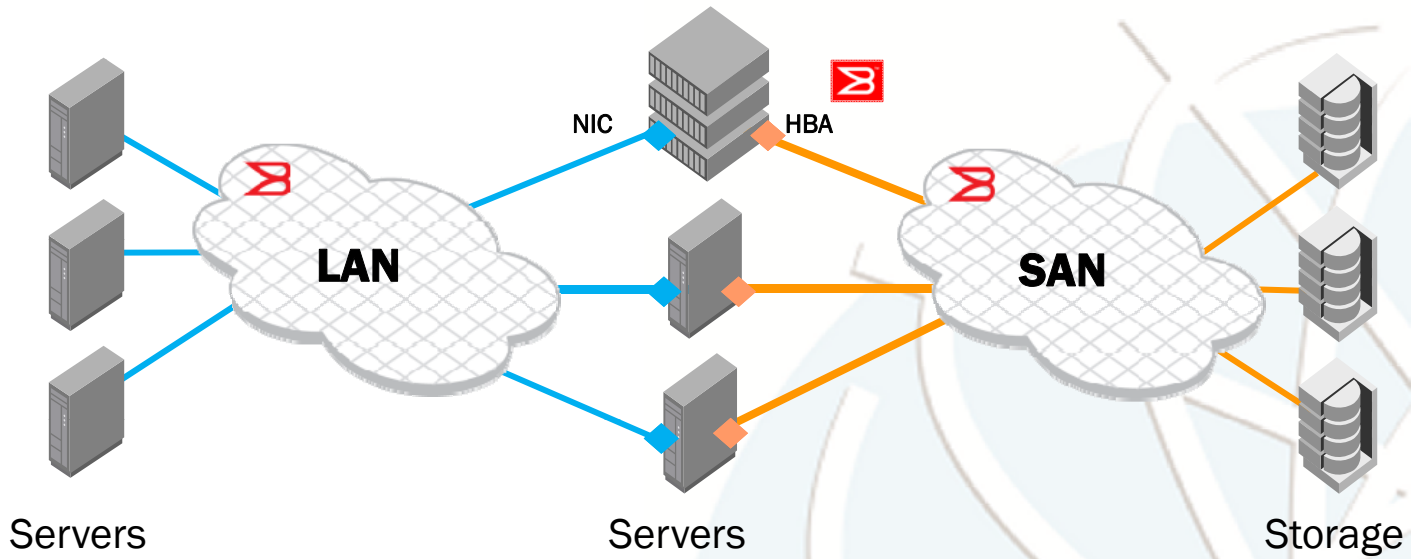
Data Center Network Evolution

Today



- Ethernet LAN for non-storage (IP) traffic
- Fibre Channel SAN for storage (FC) traffic

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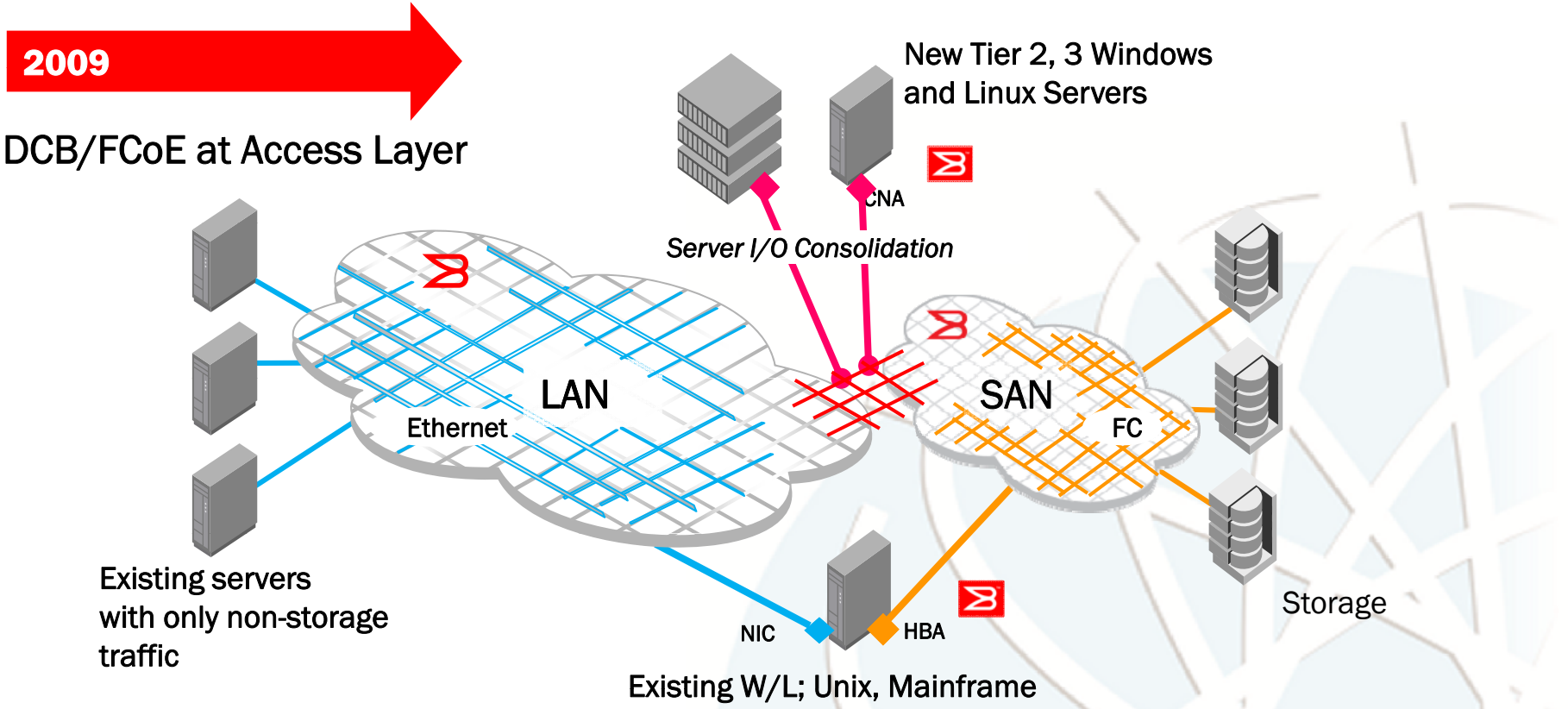
Data Center Network Evolution



- Data Center Bridging (DCB) for IP and storage (FCoE) traffic
- Ethernet LAN for IP-only traffic
- Fibre Channel SAN for storage-only (FC) traffic

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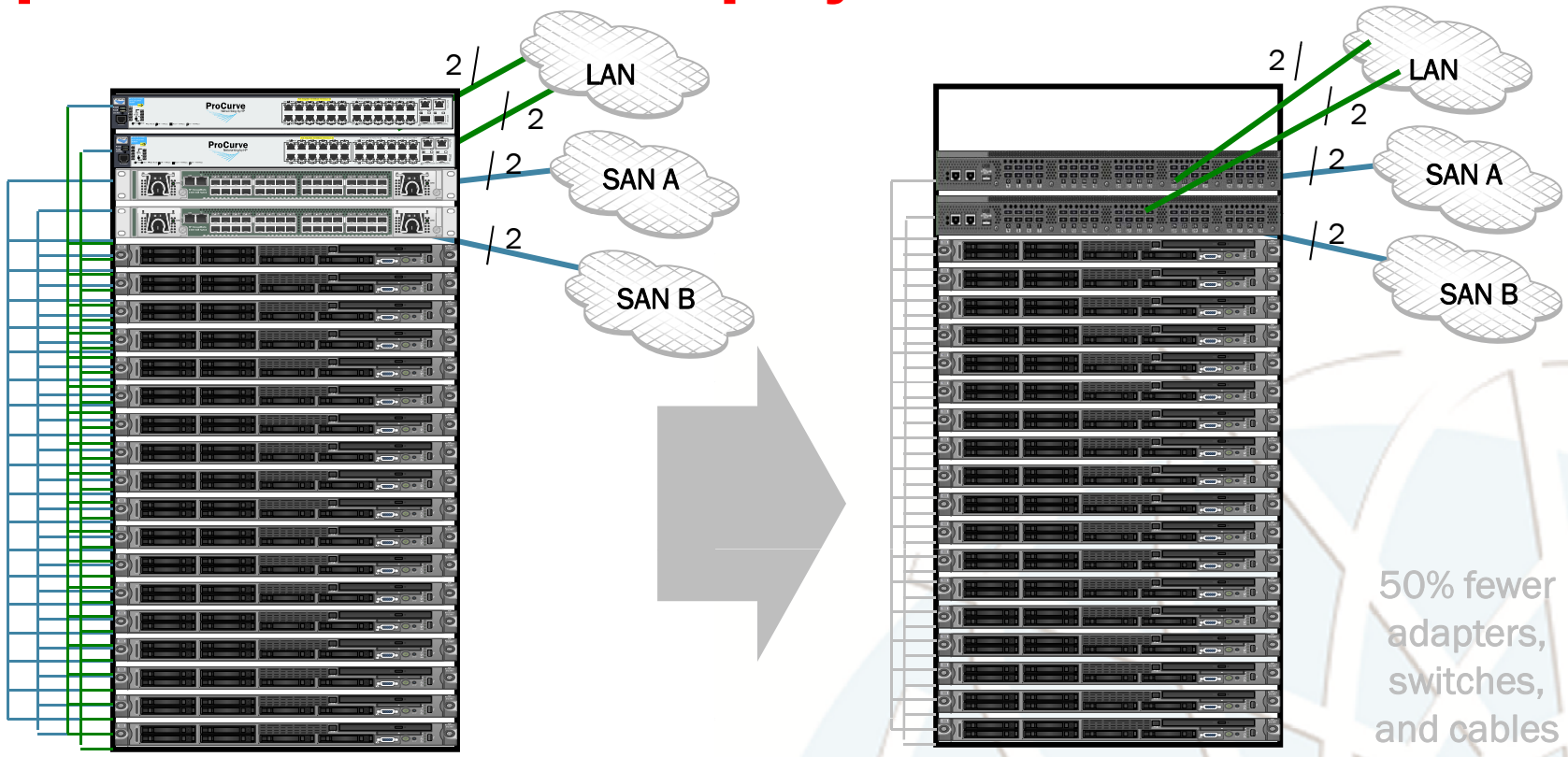
Top-of-Rack Switch Deployments



50% fewer adapters, switches, and cables

18 Servers	Ethernet	FC	Total
Adapters*	18	18	36
Switches	2	2	4
Cables	36	36	72
Uplink Ports	2	4	6

18 Servers	CEE	Ethernet	FC	Total
Adapters*	18	0	0	18
Switches	2	0	0	2
Cables	36	0	0	36
Uplink Ports	2	0	4	6

Portafolio de Productos

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Campus Access Product Family

High-performance, fully redundant modular switch for "no compromise" reliability and the highest port density

FastIron SX Series

High-performance, stackable, access switch with PoE+, smart buffers, 10GigE uplinks and advanced L2/L3 capabilities

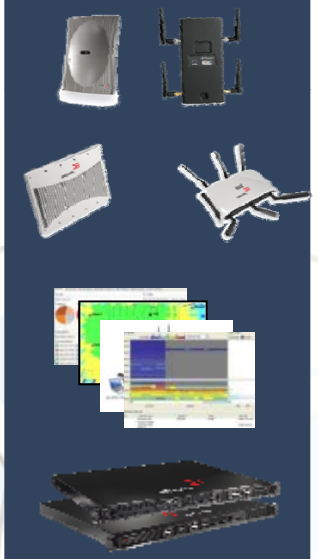
Brocade Assurance
Limited Lifetime Warranty

FCX Series

Cost effective, L2/L3 access switch with POE

Brocade Assurance
Limited Lifetime Warranty

FastIron WS Series



Industry leading wireless access points and mobility controller with "Air Defense" security

Brocade Mobility Enterprise Wireless LAN

APs

Mobility 7131/7131N

Mobility 650

Mobility 5181

Controllers

Mobility RFS4000

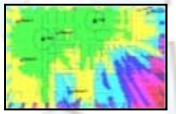
Mobility RFS6000

Mobility RFS7000

Wireless IDS

AirDefense Enterprise

Advanced Forensics



LiveRF

Advanced Troubleshooting

Spectrum Analysis

Campus Access

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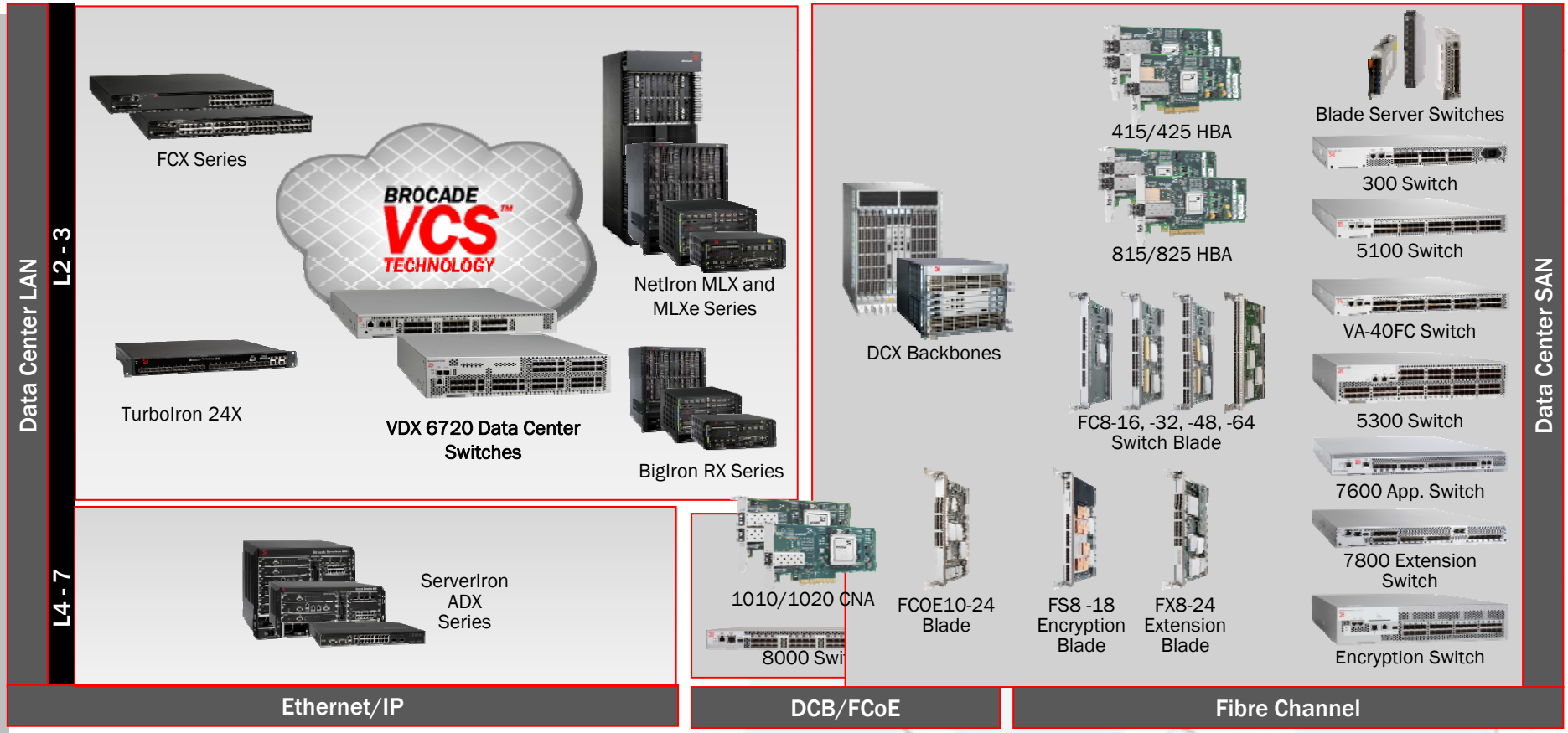
Brocade DC Product Portfolio



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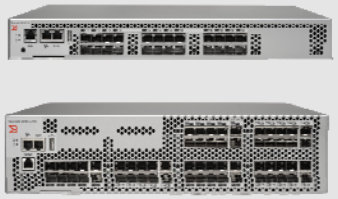
Key Service Provider Offerings

For Your Metro, Provider Core and Cloud-Scale Data Centers Needs

Brocade 6910 Ethernet Access Switch	**CES, CER** Compact IP/MPLS Router	**MLX** IP/MPLS Router for Provider Core, Metro and Data Center Core	**VDX** Ethernet fabric switch for cloud services	**ADX** Layer 4-7 application delivery controller
				

BROCADE VCS

VCS: Virtual Cluster Switching

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BROCADE

NUEVAS TECNOLOGÍAS

Brocade 6910 Ethernet Access Switch

Product Description

- Performance and scalability
  - 12-port GE SFP or Copper (10/100/1000) - Combo ports
  - Compact 1RU design, 19” rack mountable
- Form factors
  - 12-port GE combo with dual AC power (90 to 240V AC)
  - 12-port GE combo with dual DC power (-20 to -60V DC)
- Services
  - E-LINE (point-to-point) and E-LAN (multi-point) services
  - Ethernet OAM
- Management
  - Web management, industry standard CLI, SNMP
  - IPv4/v6 management
  - Brocade Network Advisor for end-to-end management*
- Mechanical
  - Dimensions: 44.5mm x 440mm x 250 mm (H x W x D)
  - Fan-less
  - Temperature hardened design (-20 deg. C to +65 deg. C)
  - Front access
- Compliance
  - MEF 9 and MEF 14

Brocade 6910 EAS - AC

Brocade 6910 EAS - DC

*Roadmap

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Carme (VDX 6710) Product Overview

Extend VCS Value to 1GE

- **Best-In-Class Performance, Reliability and Density**
  - 48x1GE Copper + 6x10GE Optical in a 1RU form factor
  - Non-blocking, cut-through, wire-speed, DCB capable ports
  - Extremely low latency (600nsec)

Product Structure
- Base Switch
- VCS License

- Allows end to end VCS
  - Enables Brocade to address 1G server connect with ease, simplicity and reliability of VCS
  - 1G Server connect VCS solution at 1G price points
- With Superior Latency and Performance

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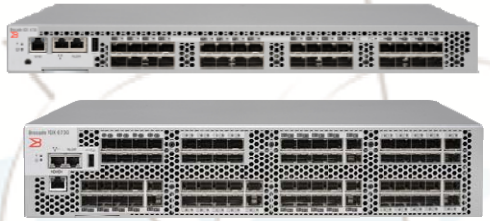
F-Callisto Product Overview

- **F-Callisto (VDX 6730)**
  - Incremental to Callisto (VDX 6720) Hardware
  - 2 SKUs with builtin 8/16 8G FC ports
- **Product Structure**
  - SKU1 - 24 SFP+ ports, 8 FC ports, 1RU
  - SKU2 - 60 SFP+ ports, 16 FC ports, 2RU
- **License Structure**
  - Similar to Callisto - VCS & POD licenses
  - POD Licenses only enable Ethernet ports
  - FCoE license will also enable FC ports and include FC optics



VDX6730

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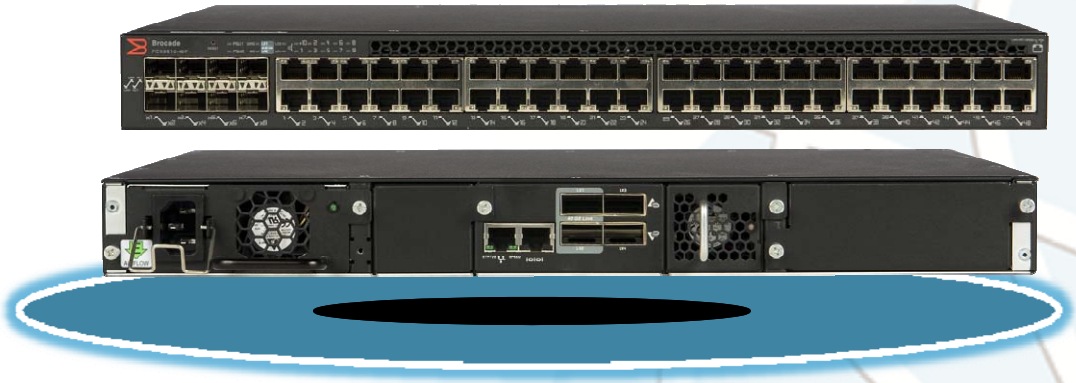
ICX6610: Most Powerful Campus Stackable

Highest-stacking bandwidth in the industry
- 160 GB of stacking BW per switch
- Hitless stacking for data and control

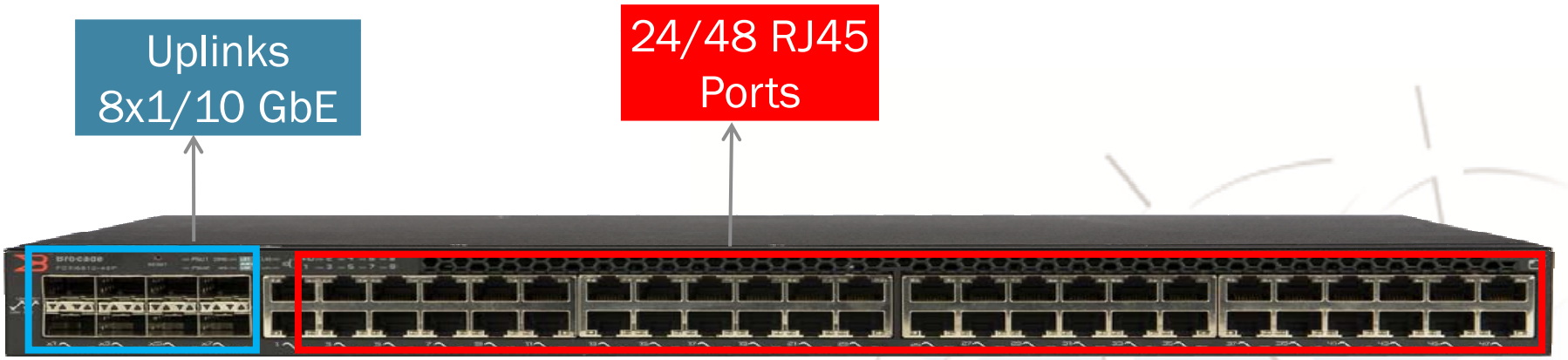
Highest-density uplinks—with 40 GbE–ready HW
- 40 GbE–ready
- In addition, up to 8x10 GbE uplink ports per switch

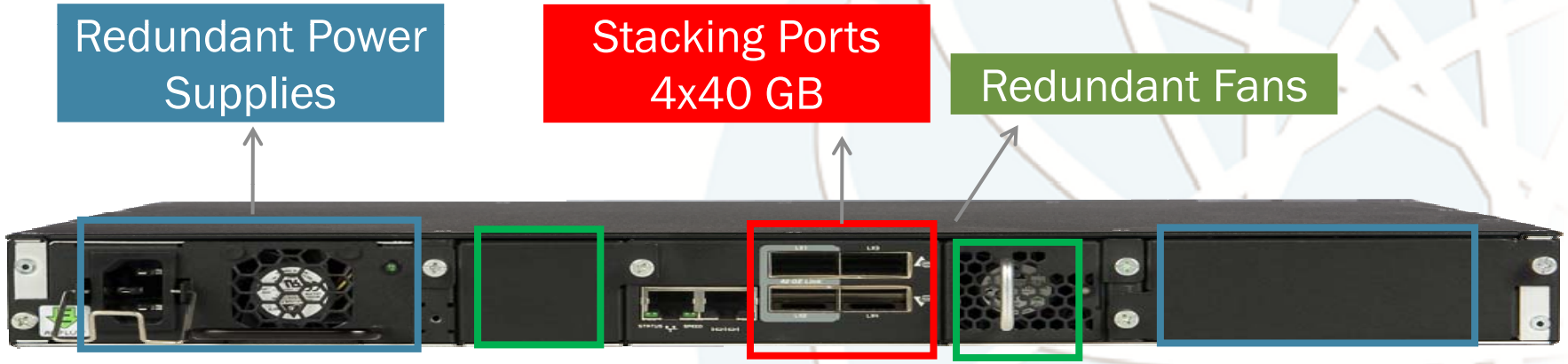


Advanced features
- Encryption via MACSEC
- Energy-Efficient Ethernet (EEE)

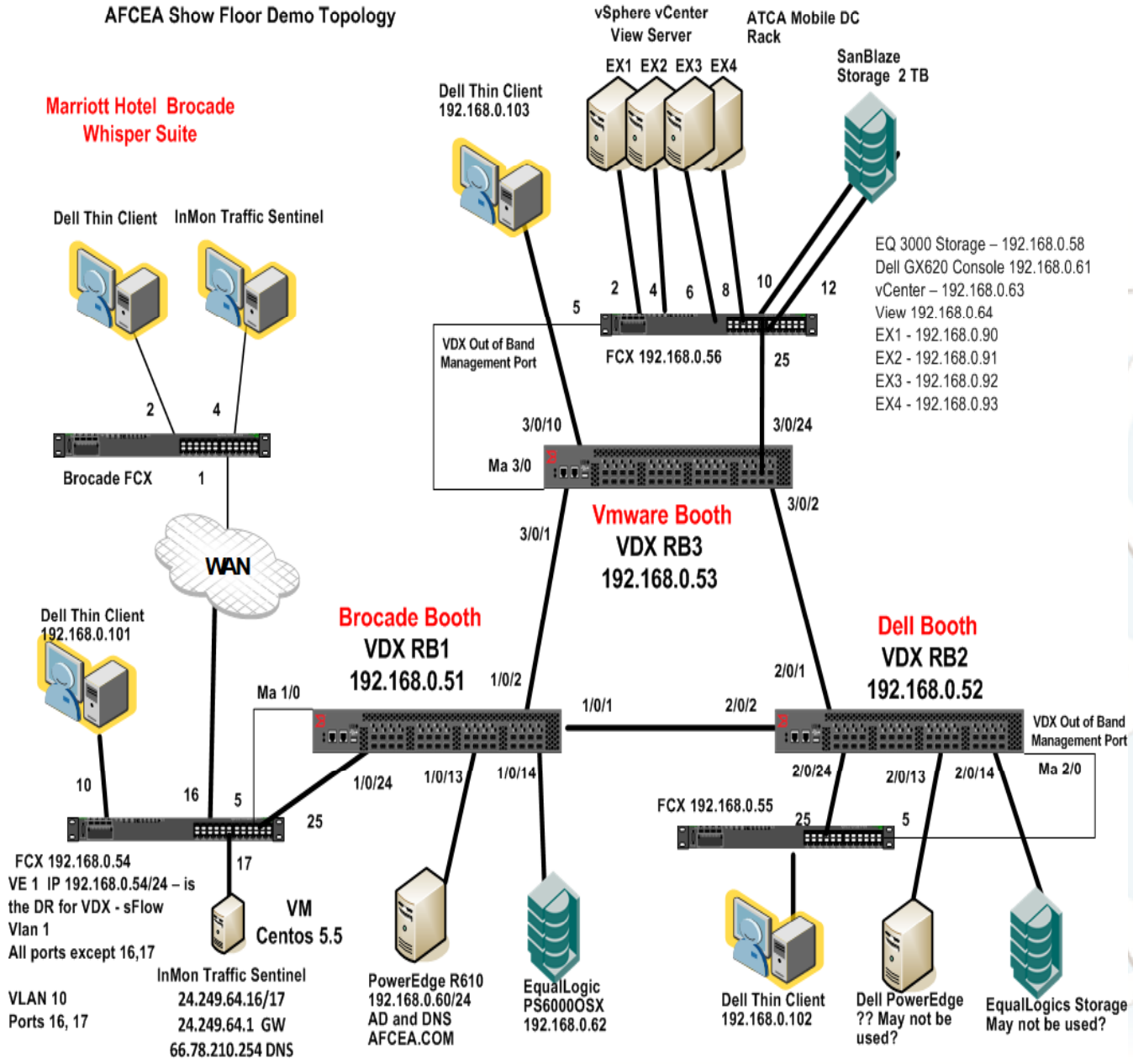
Optimum flexibility
- Redundant, removable, power supplies and fans
- Footprint—1RU and 16 inches deep
- PoE+ with high-density power supplies (1000 W)

ICX6610: Front and Back View





VDI with VMware, Dell & Brocade



BROCADE

Crezer
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Thank You

Desayuno Club de Golf

29 noviembre 2011

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REDES EXTRAORDINARIAS

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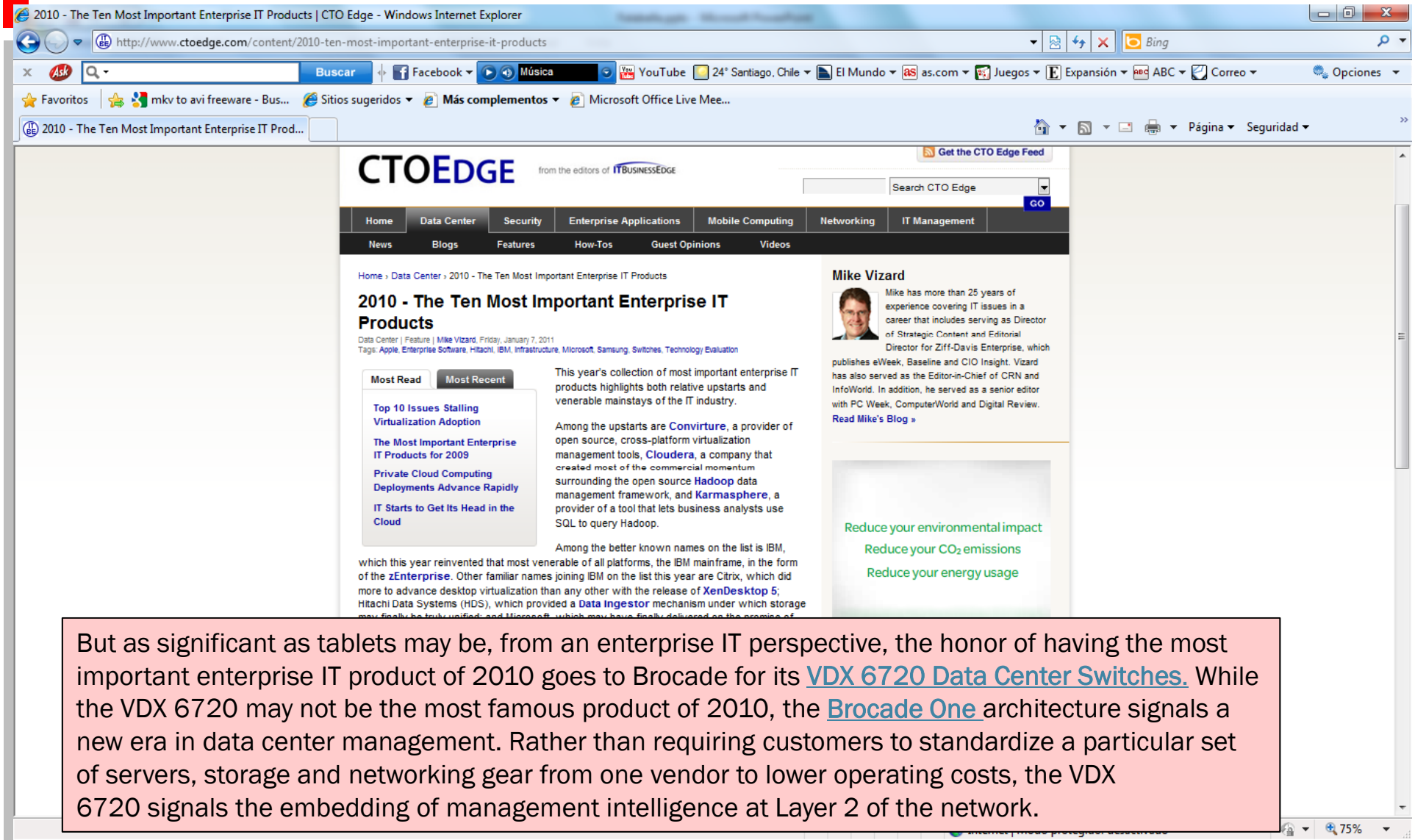
Premiados en Innovación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2010 - The Ten Most Important Enterprise IT Products
Data Center | Feature | Mike Vizard, Friday, January 7, 2011
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The Most Important Enterprise IT Products for 2009
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IT Starts to Get Its Head in the Cloud
This year's collection of most important enterprise IT products highlights both relative upstarts and venerable mainstays of the IT industry.
Among the upstarts are Convirture, a provider of open source, cross-platform virtualization management tools, Cloudera, a company that created most of the commercial momentum surrounding the open source Hadoop data management framework, and Karmasphere, a provider of a tool that lets business analysts use SQL to query Hadoop.
Among the better known names on the list is IBM, which this year reinvented that most venerable of all platforms, the IBM mainframe, in the form of the zEnterprise. Other familiar names joining IBM on the list this year are Citrix, which did more to advance desktop virtualization than any other with the release of XenDesktop 5; Hitachi Data Systems (HDS), which provided a Data Ingestor mechanism under which storage
Mike Vizard
Mike has more than 25 years of experience covering IT issues in a career that includes serving as Director of Strategic Content and Editorial Director for Ziff-Davis Enterprise, which publishes eWeek, Baseline and CIO Insight. Vizard has also served as the Editor-in-Chief of CRN and InfoWorld. In addition, he served as a senior editor with PC Week, ComputerWorld and Digital Review.
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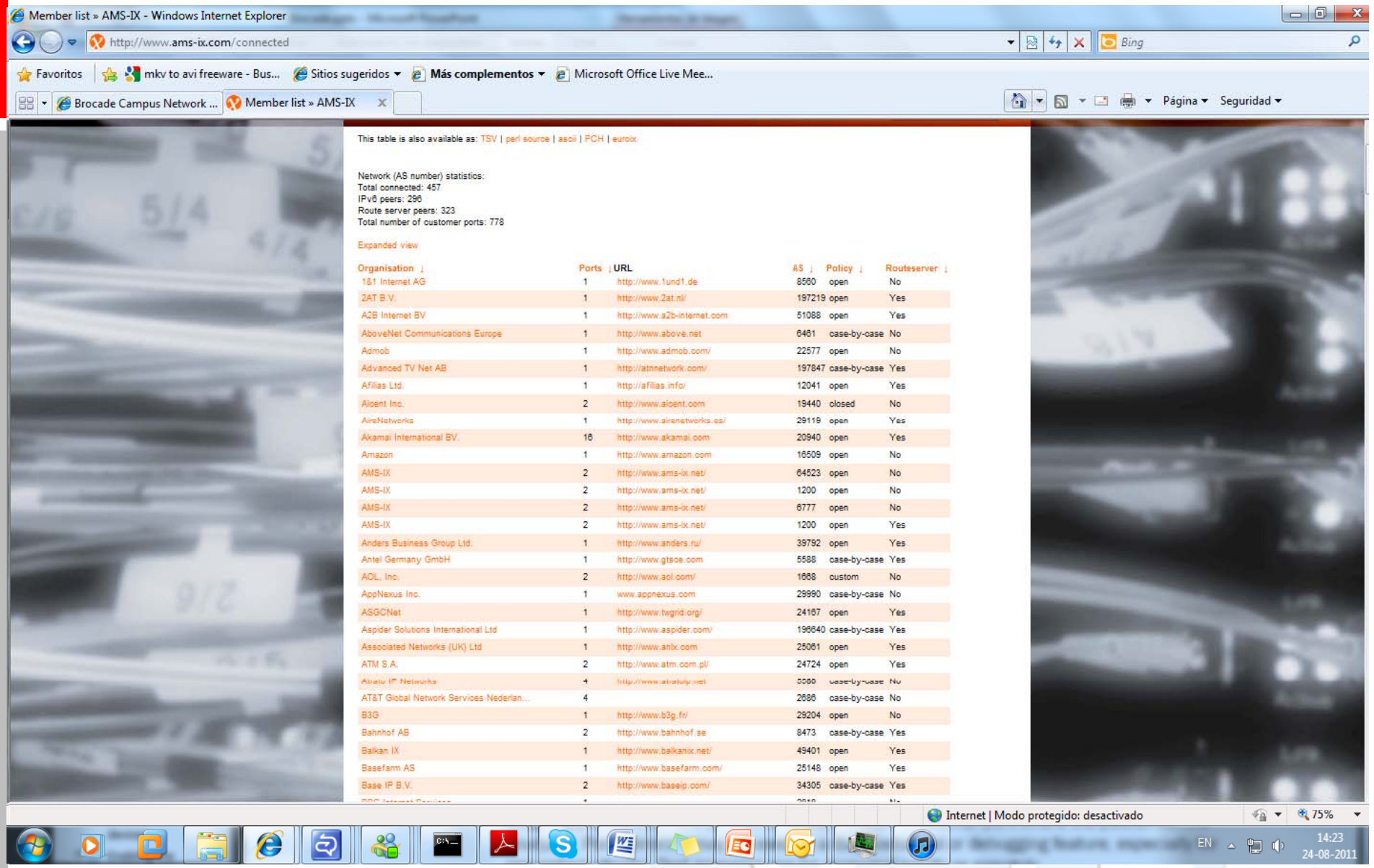
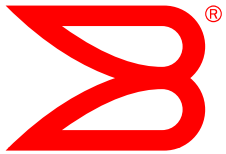
Reduce your CO2 emissions
Reduce your energy usage

But as significant as tablets may be, from an enterprise IT perspective, the honor of having the most important enterprise IT product of 2010 goes to Brocade for its VDX 6720 Data Center Switches. While the VDX 6720 may not be the most famous product of 2010, the Brocade One architecture signals a new era in data center management. Rather than requiring customers to standardize a particular set of servers, storage and networking gear from one vendor to lower operating costs, the VDX 6720 signals the embedding of management intelligence at Layer 2 of the network.

Carrier de Carriers


Member list » AMS-IX - Windows Internet Explorer
http://www.ams-ix.com/connected
Member list » AMS-IX
This table is also available as: TSV | perl source | ascii | PCH | euroix
Network (AS number) statistics:
Total connected: 457
IPv6 peers: 296
Route server peers: 323
Total number of customer ports: 778
Expanded view
Organisation | Ports | URL | AS | Policy | Routeserver
1&1 Internet AG 1 http://www.1und1.de 8560 open No
2AT B.V. 1 http://www.2at.nl/ 197219 open Yes
A2B Internet BV 1 http://www.a2b-internet.com 51088 open Yes
AboveNet Communications Europe 1 http://www.above.net 6461 case-by-case No
Admob 1 http://www.admob.com/ 22577 open No
Advanced TV Net AB 1 http://atvnetwork.com/ 197847 case-by-case Yes
Afilias Ltd. 1 http://afilias.info/ 12041 open Yes
Alcent Inc. 2 http://www.alcent.com 19440 closed No
AireNetworks 1 http://www.airenetworks.es/ 29119 open Yes
Akamai International BV. 16 http://www.akamai.com 20940 open Yes
Amazon 1 http://www.amazon.com 16509 open No
AMS-IX 2 http://www.ams-ix.net/ 64523 open No
AMS-IX 2 http://www.ams-ix.net/ 1200 open No
AMS-IX 2 http://www.ams-ix.net/ 6777 open No
AMS-IX 2 http://www.ams-ix.net/ 1200 open Yes
Anders Business Group Ltd. 1 http://www.anders.ru/ 39792 open Yes
Antel Germany GmbH 1 http://www.gtsce.com 5588 case-by-case Yes
AOL, Inc. 2 http://www.aol.com/ 1668 custom No
AppNexus Inc. 1 www.appnexus.com 29990 case-by-case No
ASGCNet 1 http://www.twgrid.org/ 24167 open Yes
Aspider Solutions International Ltd 1 http://www.aspider.com/ 196640 case-by-case Yes
Associated Networks (UK) Ltd 1 http://www.anlx.com 25061 open Yes
ATM S.A. 2 http://www.atm.com.pl/ 24724 open Yes
AT&T Global Network Services Nederlan... 4 2686 case-by-case No
B3G 1 http://www.b3g.fr/ 29204 open No
Bahnhof AB 2 http://www.bahnhof.se 8473 case-by-case Yes
Balkan IX 1 http://www.balkanix.net/ 49401 open Yes
Basefarm AS 1 http://www.basefarm.com/ 25148 open Yes
Base IP B.V. 2 http://www.baseip.com/ 34305 case-by-case Yes
Internet | Modo protegido: desactivado
75%
14:23
24-08-2011



BROCADE

Brocade One

- Unmatched simplicity
- Non-stop networking
- Application optimization
- Investment protection

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Simple

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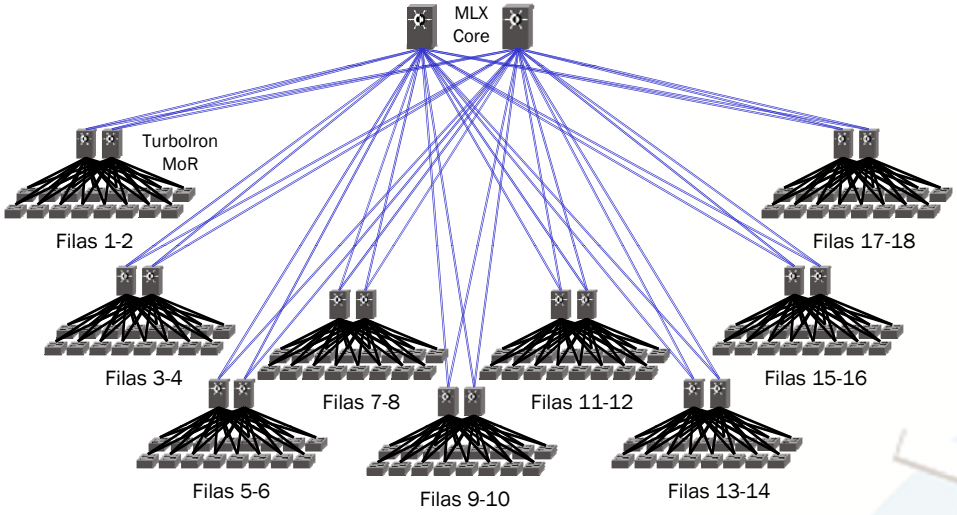
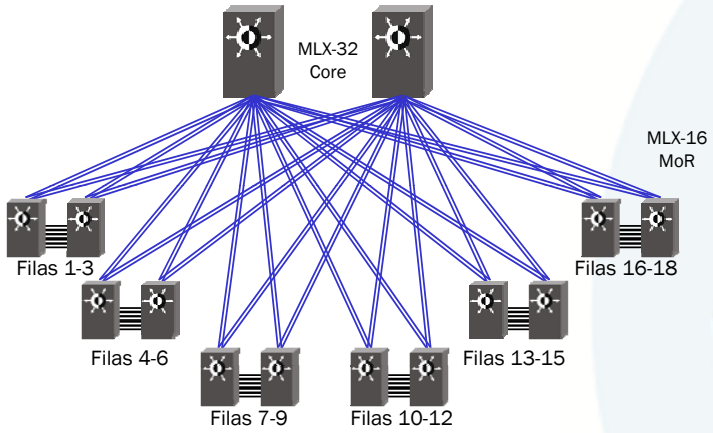
Simple



- 164 Equipos
- 12096 puertos de 1G



- 14 Equipos
- 12096 puertos de 1G

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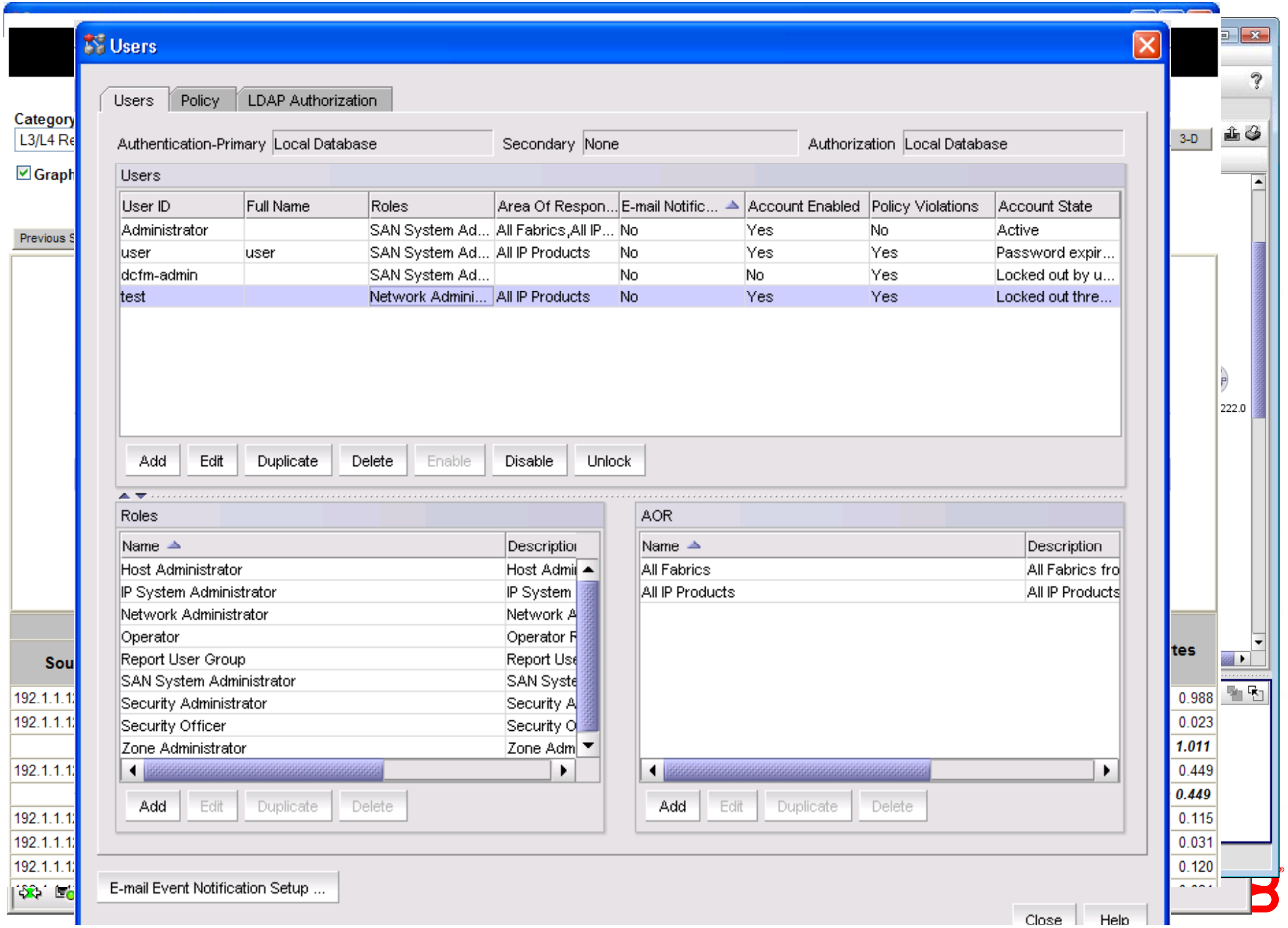
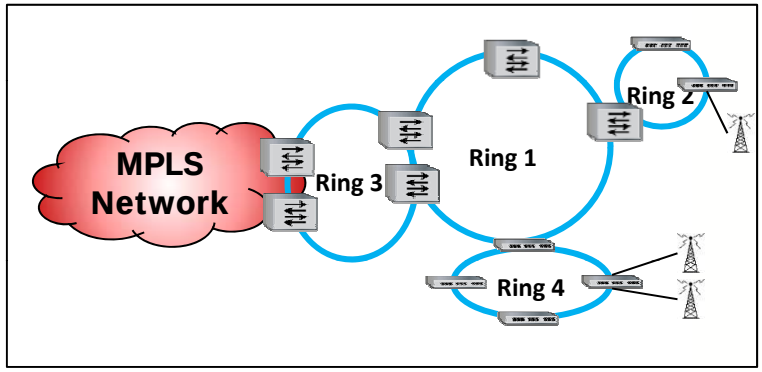
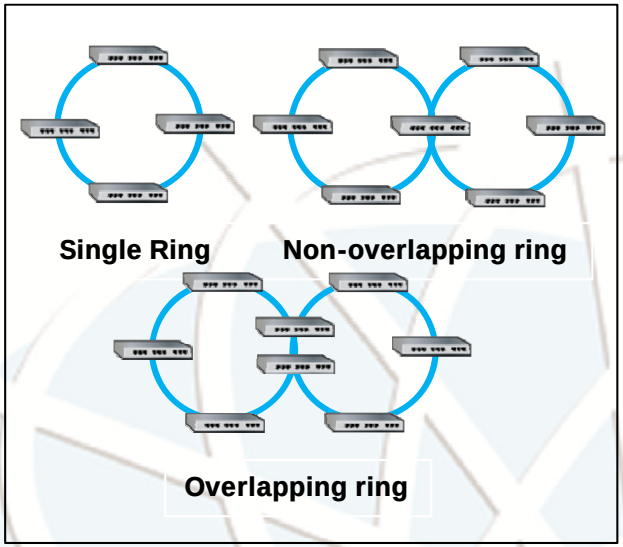
Simple


Users
Users
Policy
LDAP Authorization
Authentication-Primary
Local Database
Secondary
None
Authorization
Local Database
Users
User ID
Full Name
Roles
Area Of Respon...
E-mail Notific...
Account Enabled
Policy Violations
Account State
Administrator
SAN System Ad...
All Fabrics,All IP...
No
Yes
No
Active
user
user
SAN System Ad...
All IP Products
No
Yes
Yes
Password expir...
dcfm-admin
SAN System Ad...
No
No
Yes
Locked out by u...
test
Network Admini...
All IP Products
No
Yes
Yes
Locked out thre...
Add
Edit
Duplicate
Delete
Enable
Disable
Unlock
Roles
Name
Description
Host Administrator
IP System Administrator
Network Administrator
Operator
Report User Group
SAN System Administrator
Security Administrator
Security Officer
Zone Administrator
AOR
Name
Description
All Fabrics
All IP Products
E-mail Event Notification Setup ...
Close
Help

Redes Sin interrupciones



Typical metro network with multiple rings



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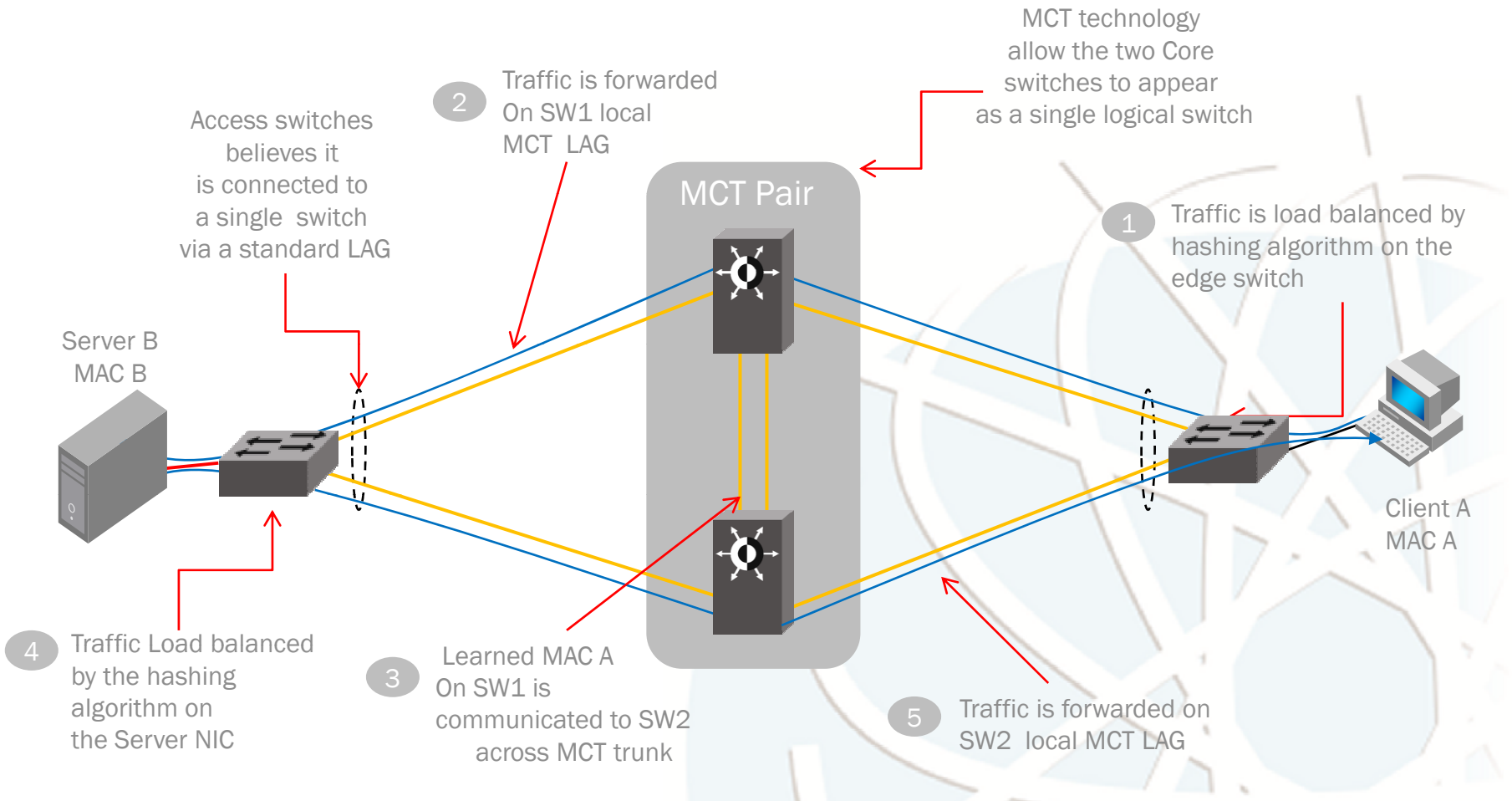
Redes Sin Interrupciones

Multi-Chassis Trunking



Active-Active Topology, all nodes and all links forwarding traffic

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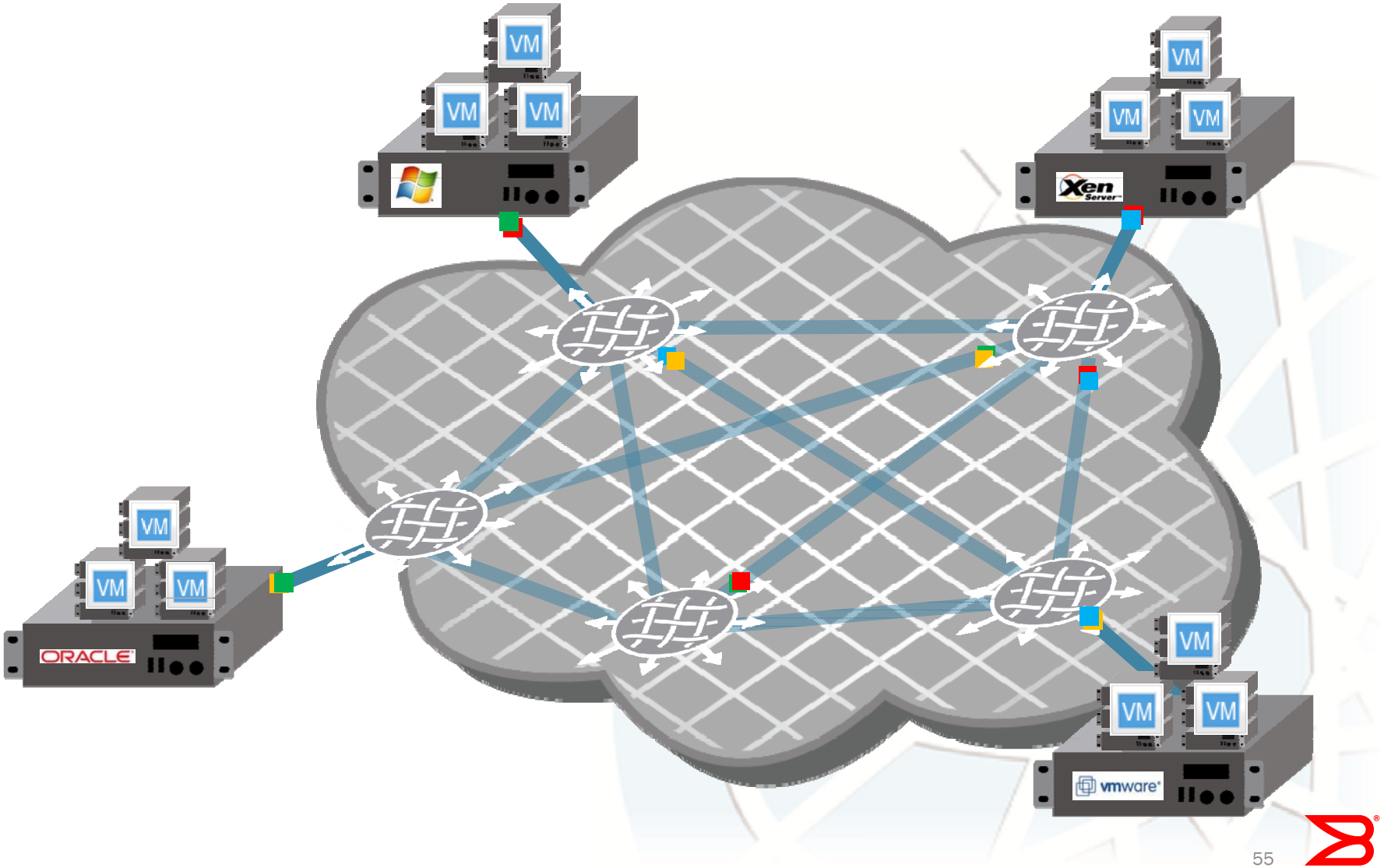
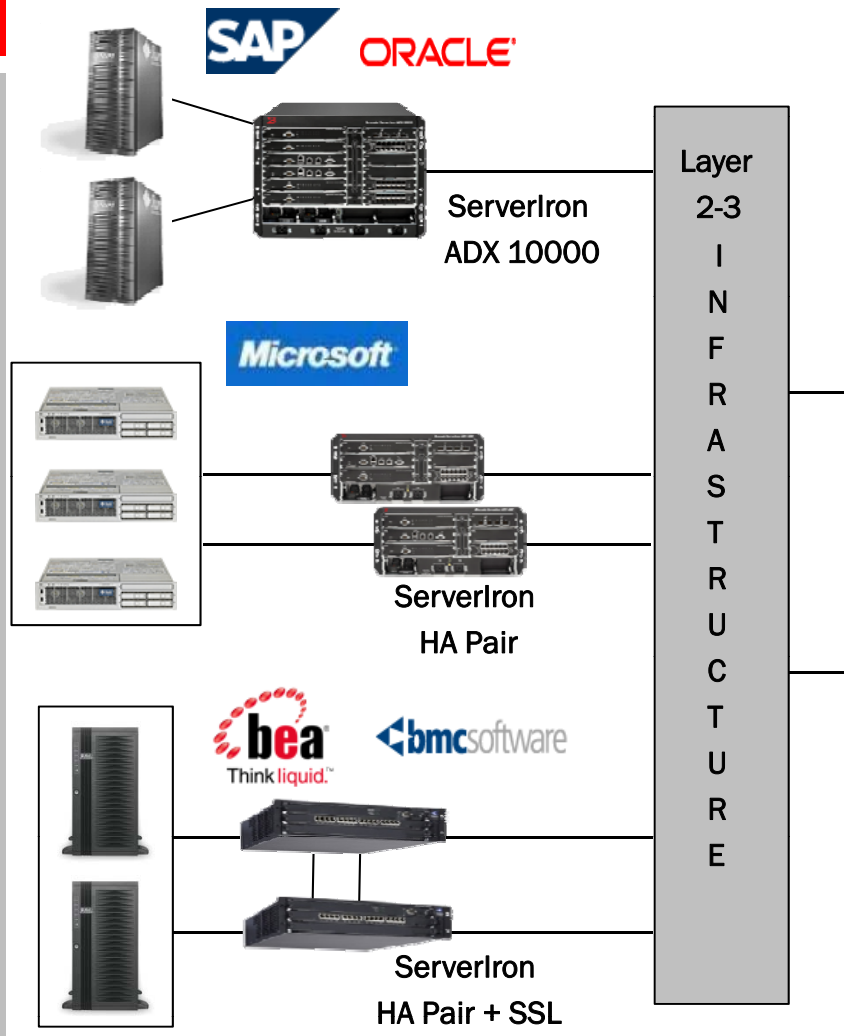
Redes Sin Interrupciones

Ethernet Fabric



Optimización de Aplicaciones



Application Deployment Problems

- Scaling Application Performance
- Securing Applications from DoS and other attacks
- Delivering Application and Infrastructure High Availability
- Offloading Server SSL and HTTP processing

ServerIron Can Provide

- Increased Application Performance for multiple servers
- Industry's highest speed DoS Defense at over 120M SYN / sec
- Active-Active and Hot Standby HA
- Integrated and upgradeable SSL and HTTP offload
- Application Health Checks
- Chassis and stackable solutions with redundant power

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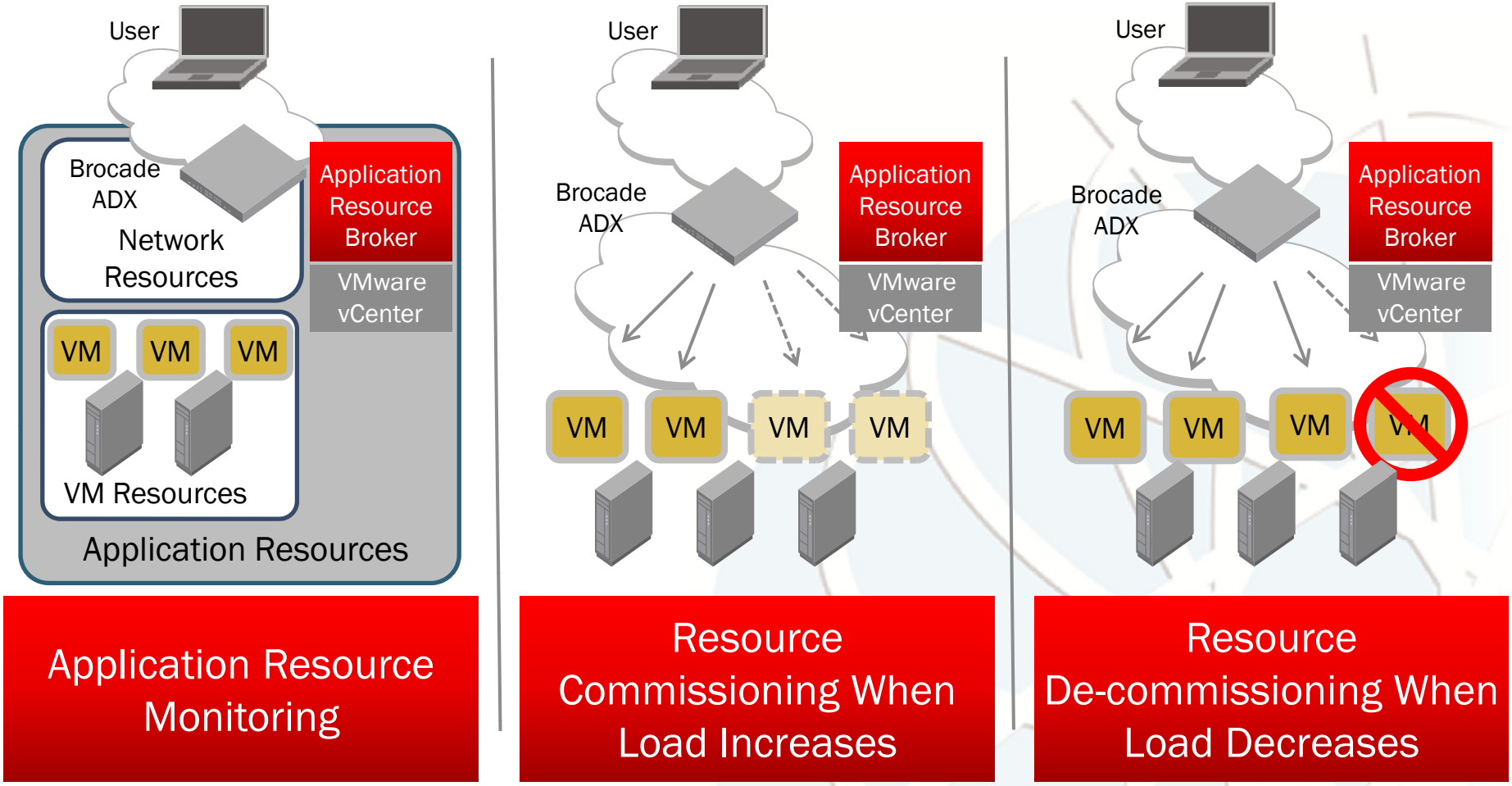
New: Brocade Application Resource Broker

Brocade ADX Software Module Enabling Private Clouds



Application Resource Monitoring

Resource Commissioning When Load Increases

Resource De-commissioning When Load Decreases

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Brocade Application Resource Broker

Sample Rules in Programmable On-Demand Provisioning Engine

Metric	Operator	Threshold	Action
CPU Usage/Instance	>	70%	Log
CPU Usage/Instance	>	80%	Provision VM
CPU Usage/Instance	<	40%	Decommission VM
Response Time (latency) / Instance	>	100ms	Provision VM
Concurrent Connections	>	2000	Provision VM
Average Response Time	<	20ms	Decommission VM

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Optimización de Aplicaciones

Industry's first 2 port 100 GbE module

Massive 100 GbE density of 32 wire-speed ports

Terabit trunks with 1.6 Tb/s per trunk.

Ports on Demand enabling pay as you grow strategy

Classic XMR and MLX chassis support 1-port 100 GbE

Full featured card with Advanced MPLS and IPv4/IPv6 capabilities

1 million IPv4 and 240 K IPv6 FIB capacity

802.3ba compliant and supports CFP based optics

Backwards compatible with existing XMR & MLX interface modules

Field upgradeable programmable network processors

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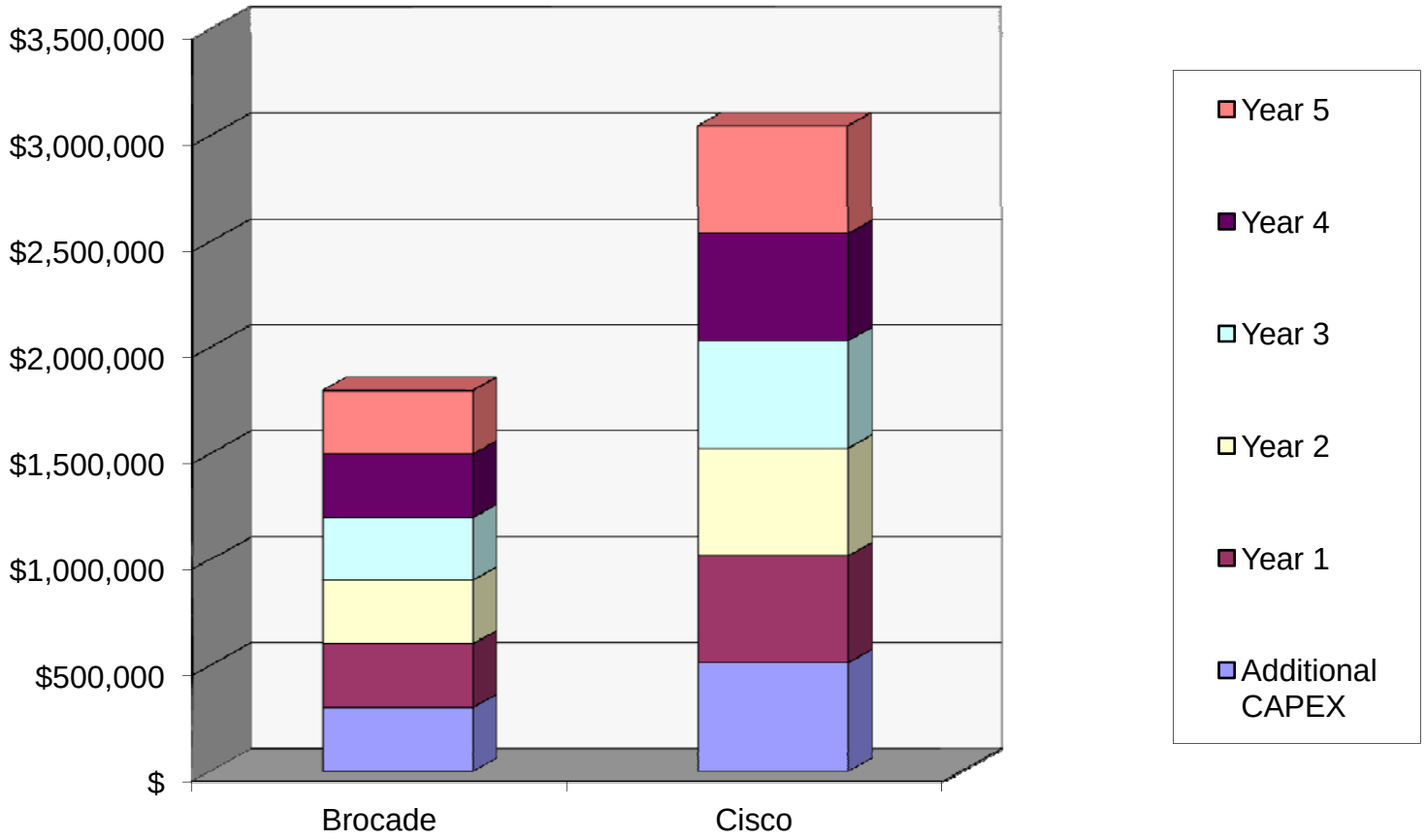
Protección de la Inversión



5 Years Cost (US Dollars)	
Brocade	**$ 1,797,236**
Cisco	**$ 3,045,125**
Difference	**$ 1,247,889**

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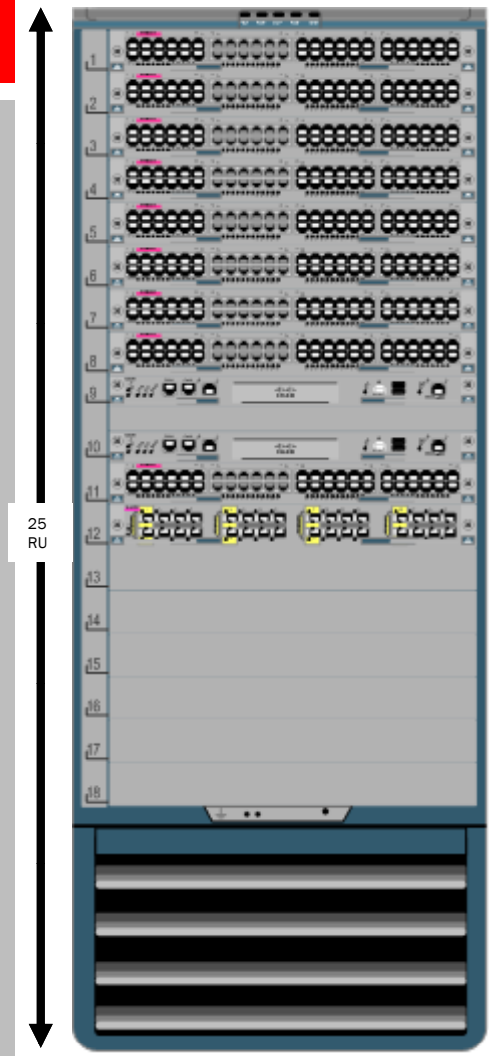
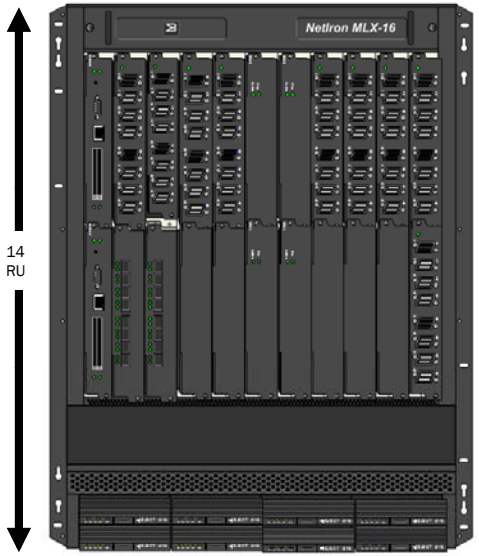
Protección de la Inversión





Similar Configuration with

- 432 1GbE ports
- 16 10GbE ports

Growing

- Brocade:
  - 5 Free Slots
  - 14 RU
  - Up to 2 additional Switches for a total of 3 per rack
- Cisco
  - 5 Free Slots
  - 25 RU
  - Can't install any other switch in the same rack

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Protección de la Inversión

Nos Basamos en Standards

Nuevas versiones, nuevas mejoras, el mismo HW

Metric	12.2.x ADX 10000	12.2.x ADX 4000	12.2.x ADX 1000	12.3.x ADX 10000	12.3.x ADX 4000	12.3.x ADX 1000
Number of App Cores (1 core=1 BP)	4*ASM8 (32 cores)	2*ASM8 (16 cores)	4 cores	4*ASM8 (32 cores)	2*ASM8 (16 cores)	4 cores
IPV4 - L4 Connections/Second (HTTP 1.0)	1.6M	800,000	200,000	3M	1.5M	375,000
IPV4 - L4 Transactions/Second (HTTP 1.1)	16M	8M	2M	20M	10M	2.5M
IPV4 - L7 Connections/Second (HTTP 1.0)	720,000	360,000	90,000	720,000	360,000	90,000
IPV4 - L7 Transactions/Second (HTTP 1.1)	1.2M	600,000	150,000	1.2M	600,000	150,000
IPV4 DNS Queries/Second (Stateful)	2.4M	1.2M	300,000	3.6M – 4.8M (TBD)	1.8M - 2.4M (TBD)	450K – 600K (TBD)
IPV4 DNS Queries/Second (Fast Stateless)	14M	7M	1.75M	18M	9M	2.25M
IPV6 - L4 CPS HTTP 1.0	560,000	280,000	70,000	1M	500,000	125,000
Aggregate Throughput (L4) IPV4	70 Gbps	35 Gbps	9 Gbps	70 Gbps	35 Gbps	9 Gbps
Aggregate Throughput (L7) IPV4	70 Gbps	35 Gbps	9 Gbps	70 Gbps	35 Gbps	9 Gbps
Aggregate Throughput (L4) IPV6	40 Gbps	20 Gbps	5 Gbps	60 Gbps	30 Gbps	7.5 Gbps
Aggregate Throughput (L7) IPV6	40 Gbps	20 Gbps	5 Gbps	40 Gbps	20 Gbps	5 Gbps
Health checks (max # of ports)	4K	4K	4K	8K	8K	8K

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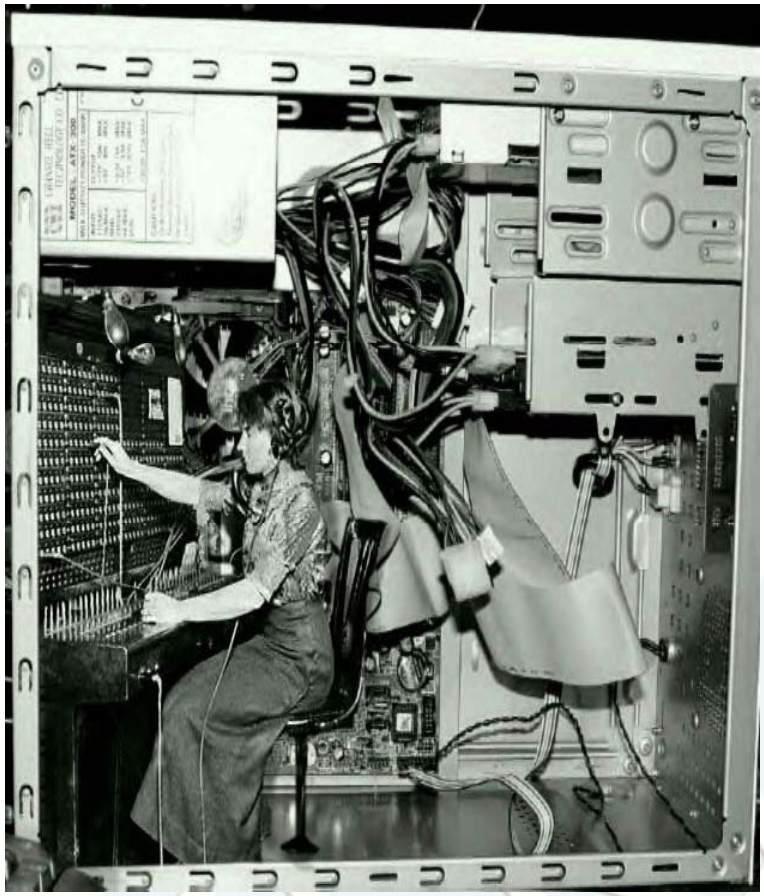
BROCADE

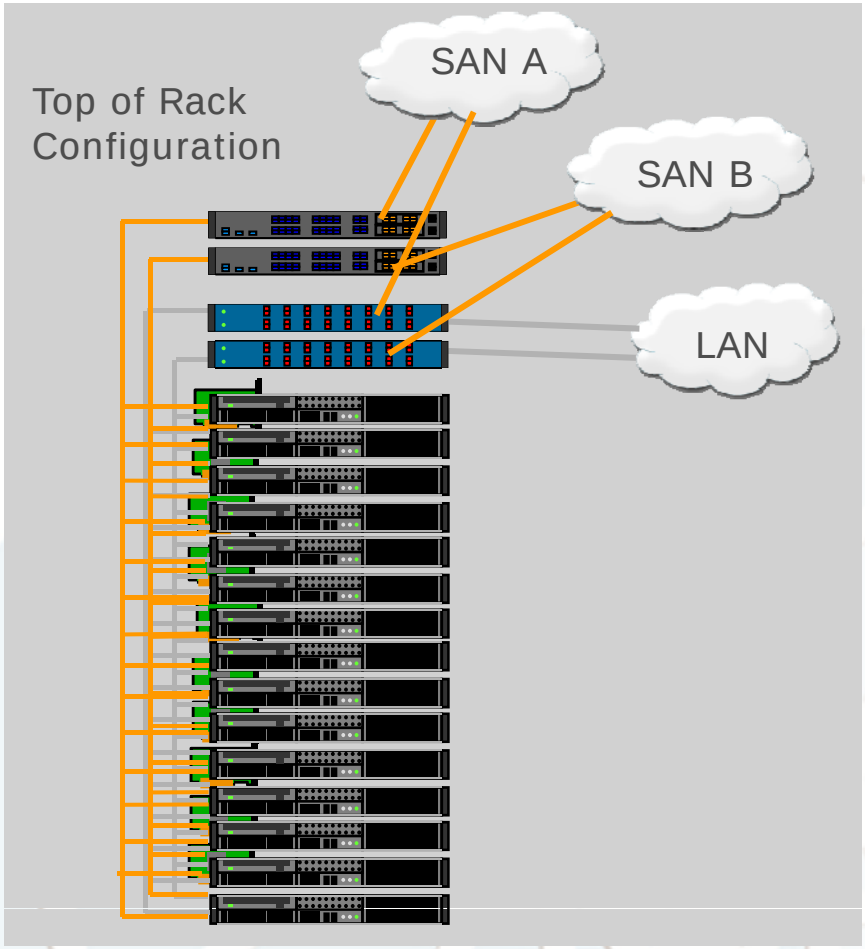


Productos de Convergencia

FCoE & DCB Benefits

Simpler Configurations & Lower Costs

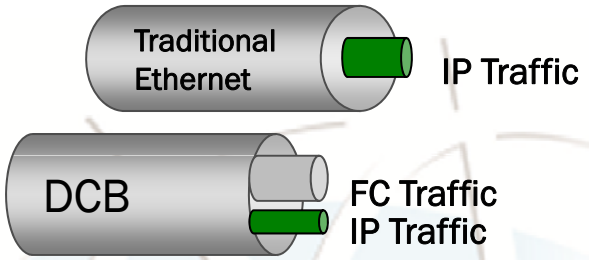
- Reduce number of server adapters, ports, cables and switch ports
- Reduce power consumption
- Increase speed and utilization of links
- Simplify configurations and diagnostics

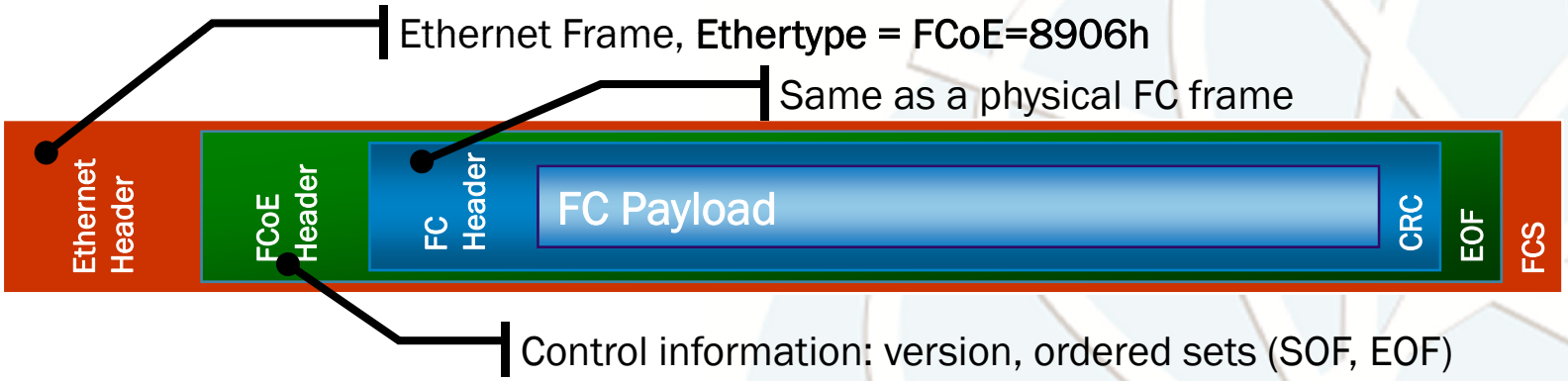


Fibre Channel over Ethernet

Encapsulation protocol

Encapsulation protocol for transporting FC over Ethernet (Lossless Ethernet: DCB)





- FC frame remains intact: FC does not change
- Ethernet needs a larger frame: Larger than 1.5 KB
- Ethernet must become lossless to carry storage data with integrity

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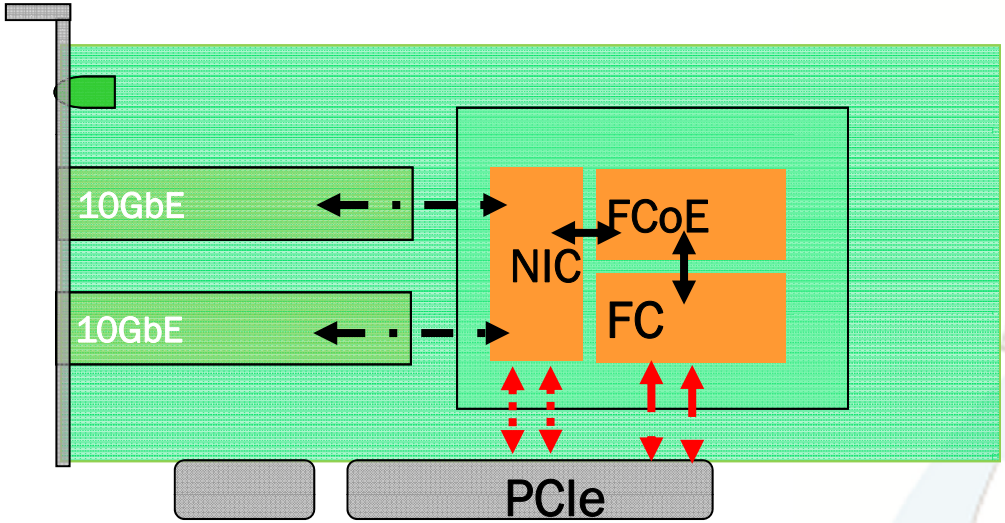
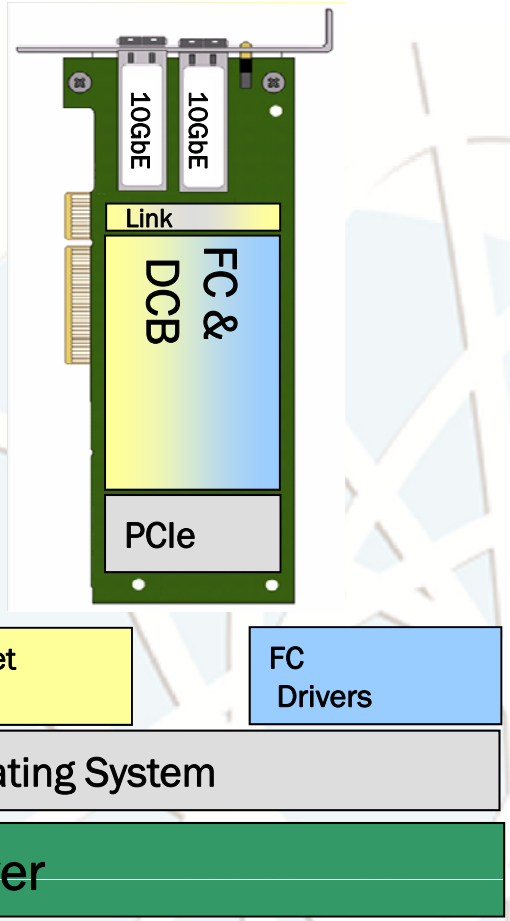
Model of FCoE Initiator

Converged Network Adapters (CNAs)





- One or more FC interfaces to the host
- One or more NIC interfaces to the host
- FCoE function: Not seen by the host:
  - Performs the encapsulation and de-encapsulation

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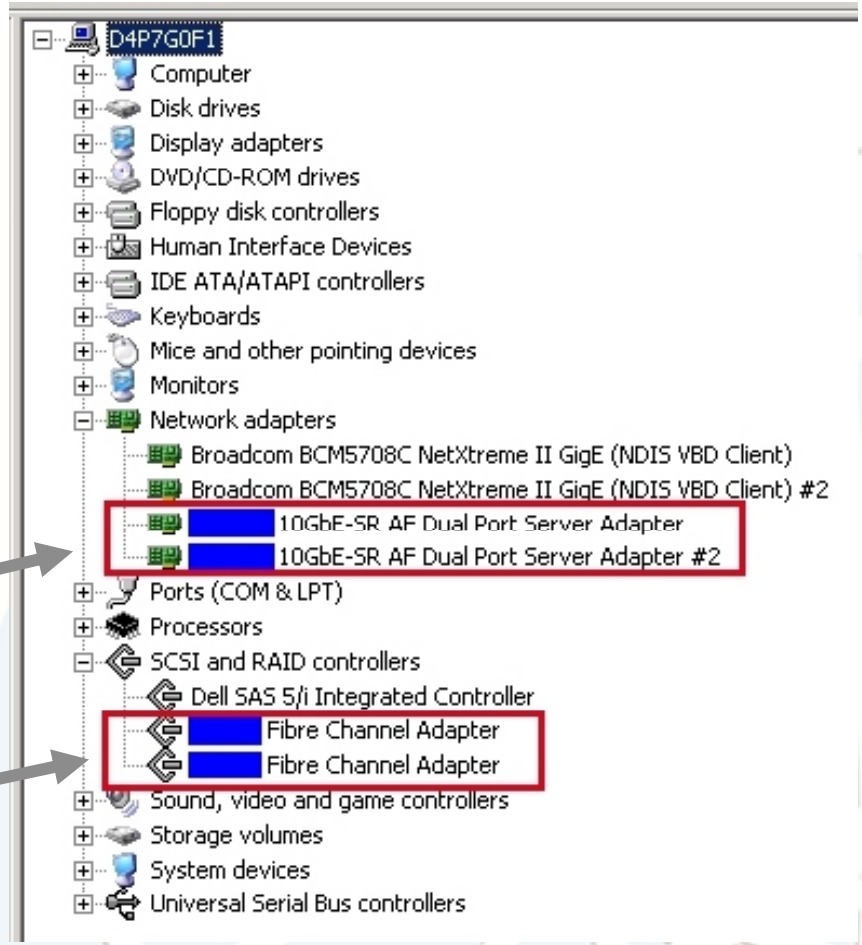
Server OS View of CNAs

No Change in OS View

- Standard drivers
- Same management
- Operating System sees:
  - Dual port 10 Gigabit Ethernet adapter
  - Dual Port 4/8 G Fibre Channel HBAs



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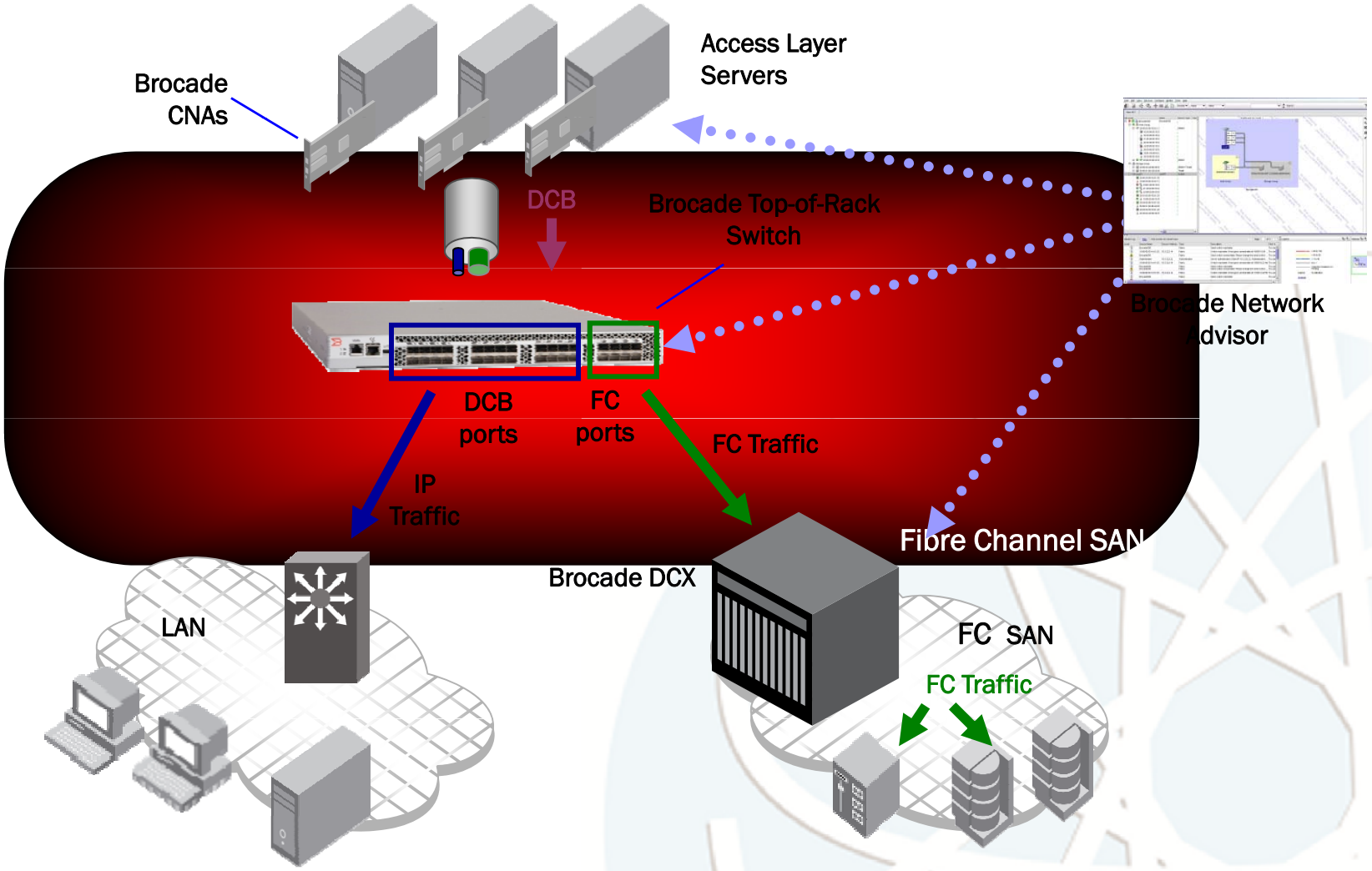
Brocade DCB/FCoE ToR Solutions

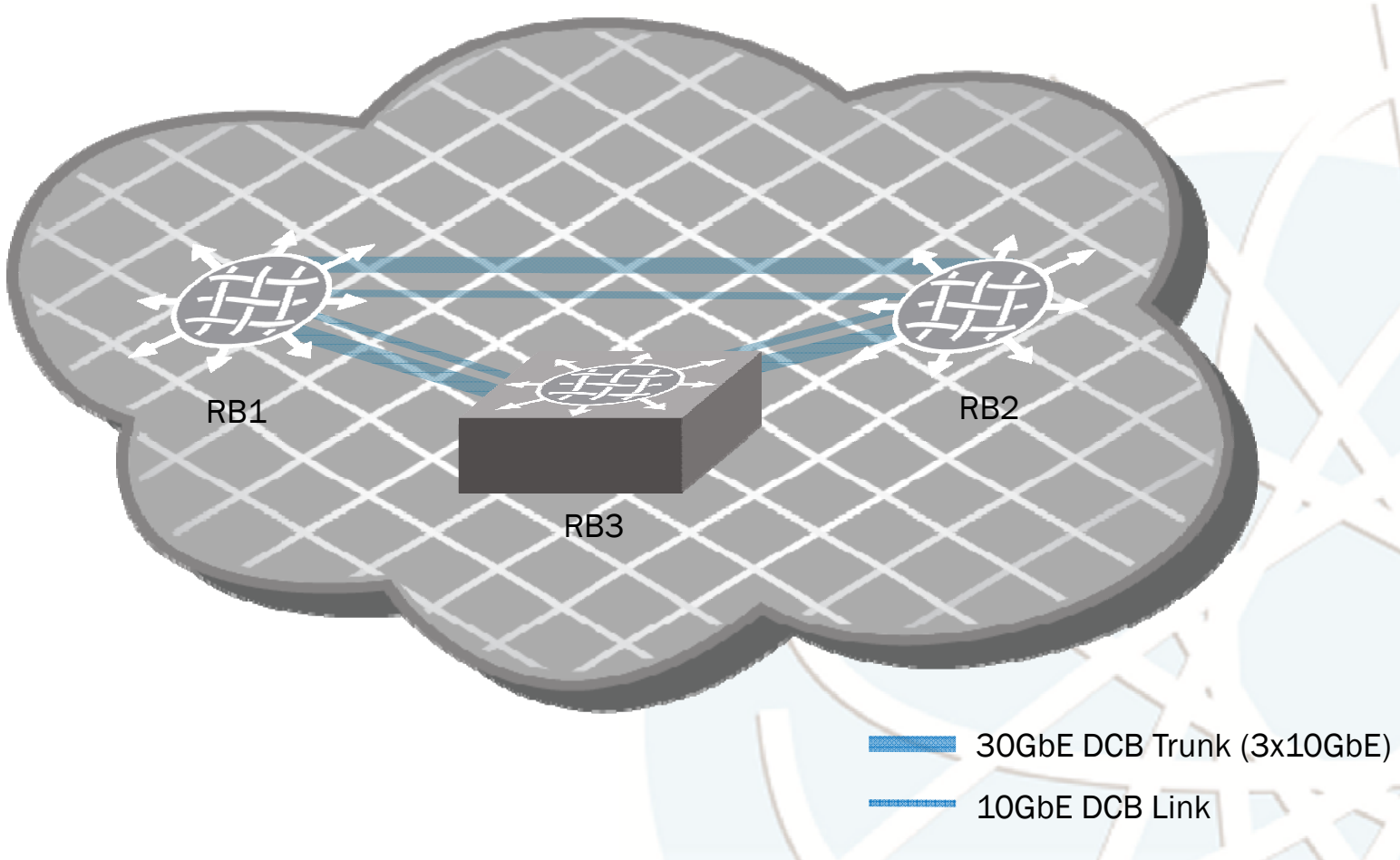


BROCADE

ETHERNET FABRICS

Making Networking Easier

Automatic Addition of switches, Automatic Trunk Creation



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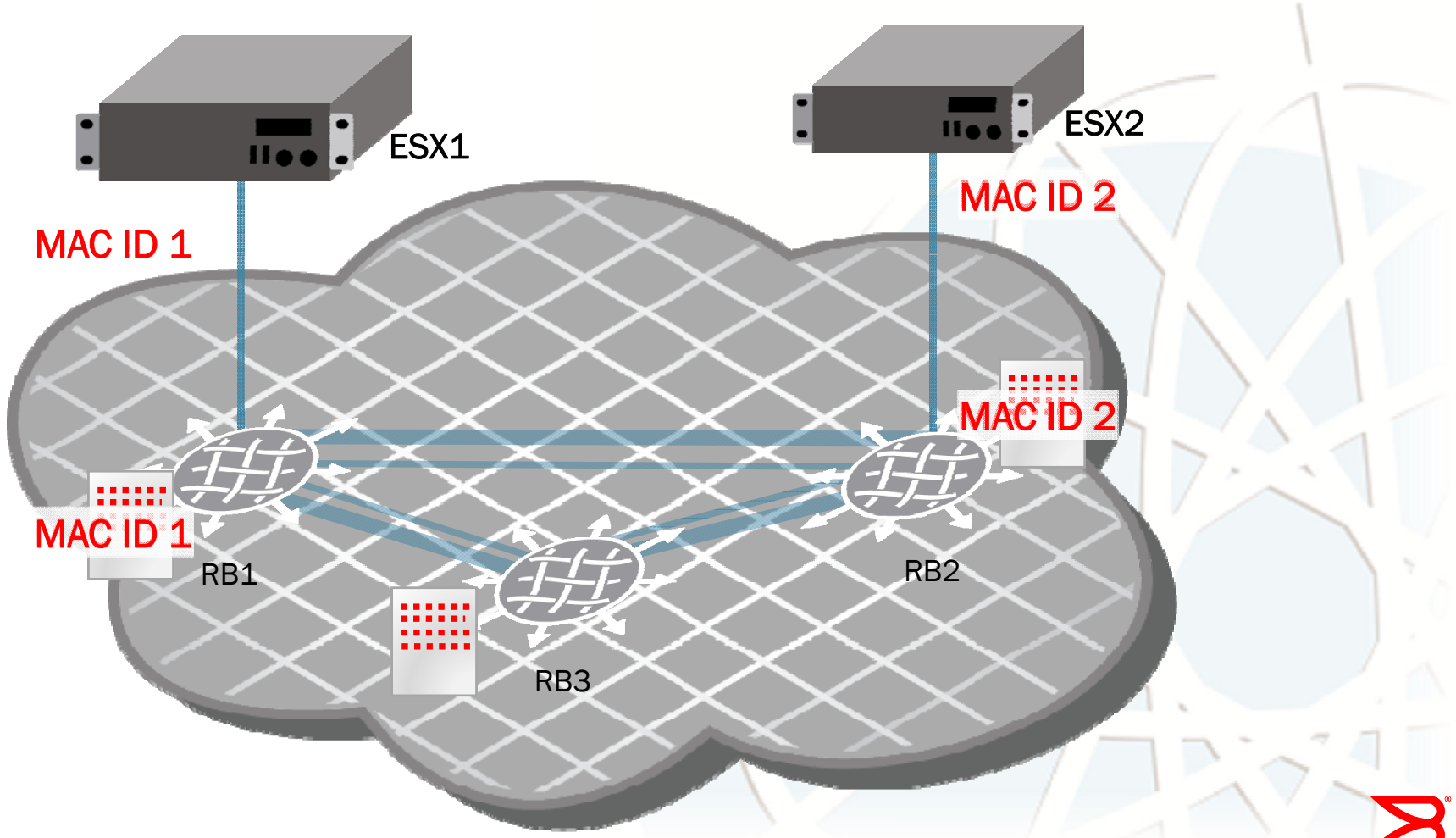
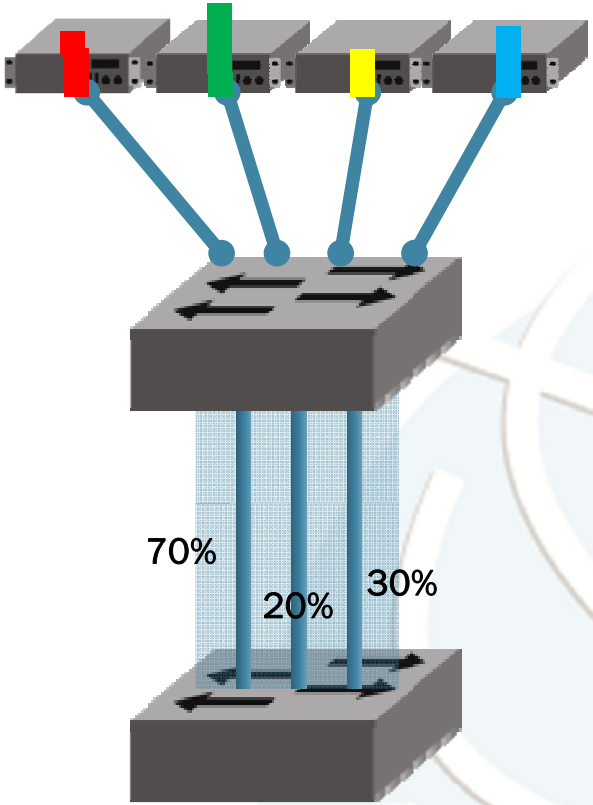
Ethernet Fabrics

Distributed MAC address tables



Traditional Link Aggregation

Switch-to-Switch LAG – Hashing algorithms cause imbalances



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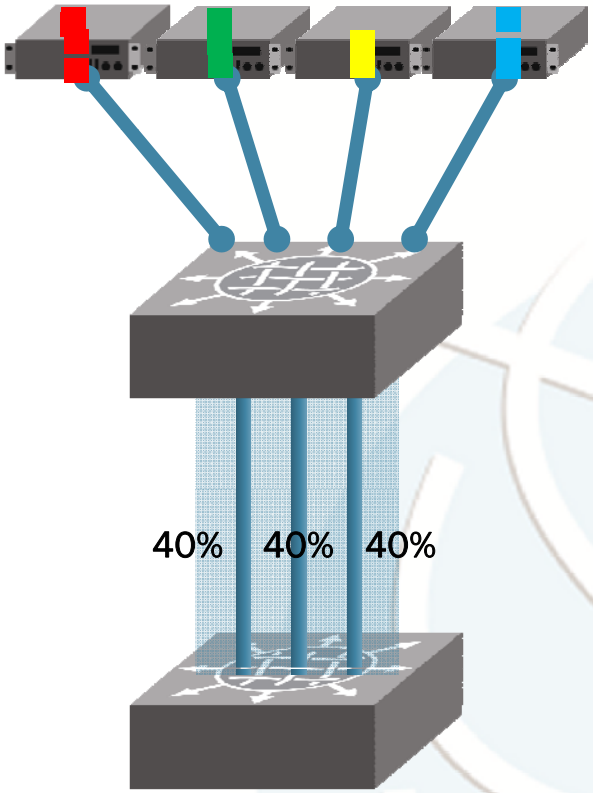
Virtual Link Aggregation (Trunking)

Balanced Connections with no hashing algorithms



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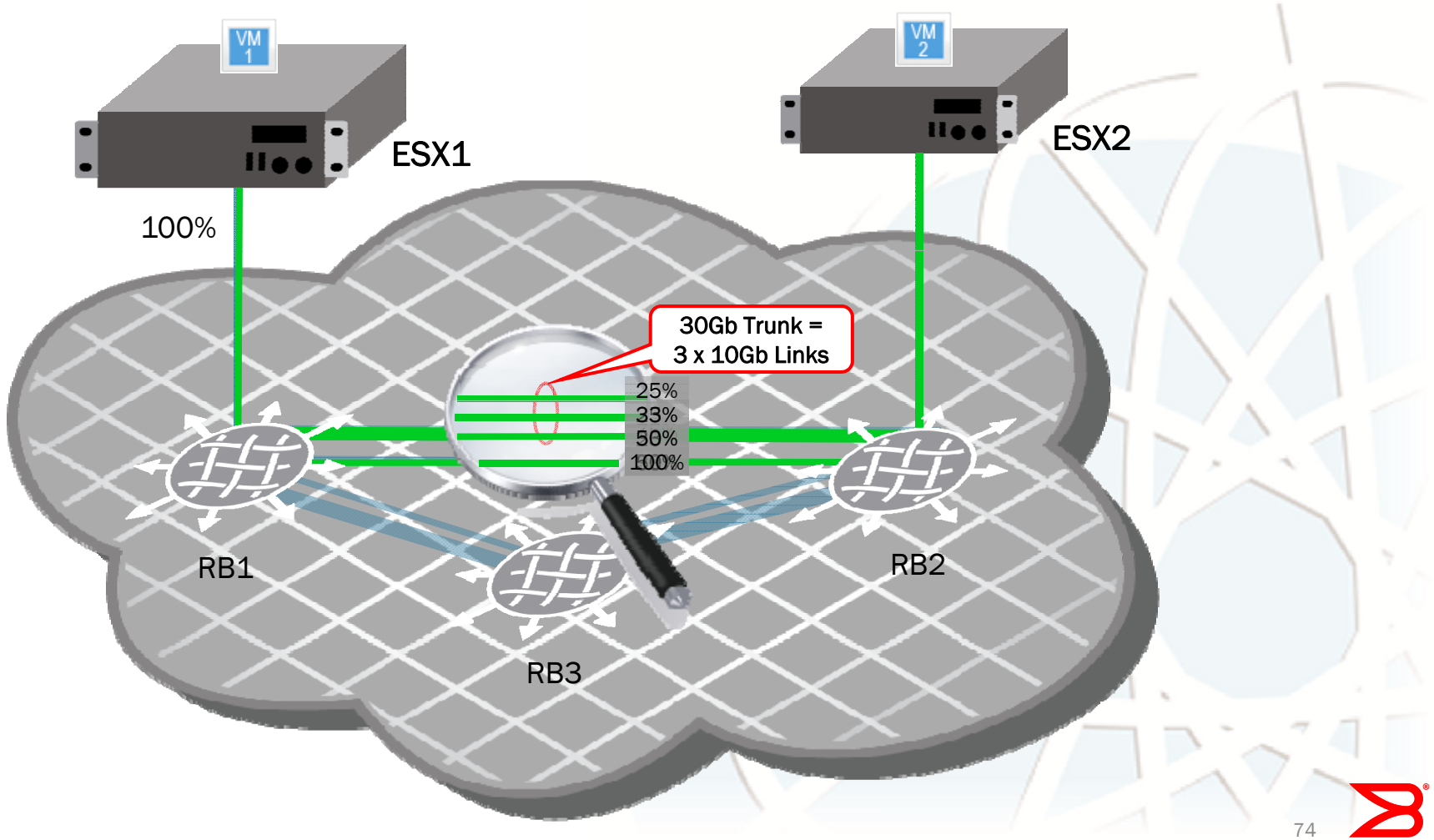
Ethernet Fabrics

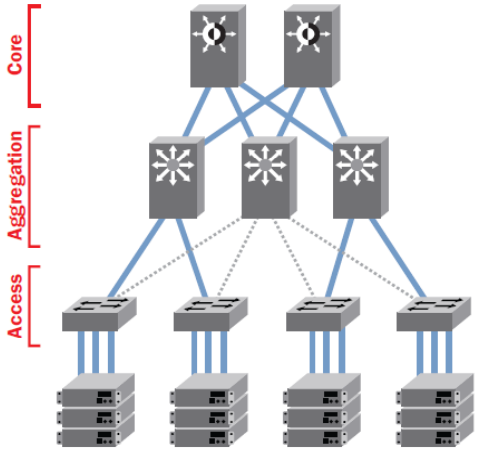
Equal Cost Multi-Pathing



Ethernet Fabrics a Phased Approach

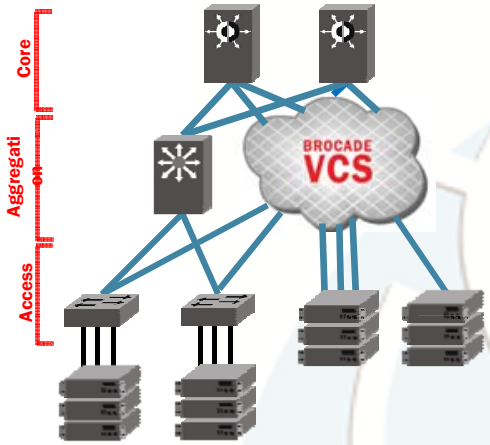
Easing into a new A New Network Architecture

Classic Hierarchical Ethernet Architecture



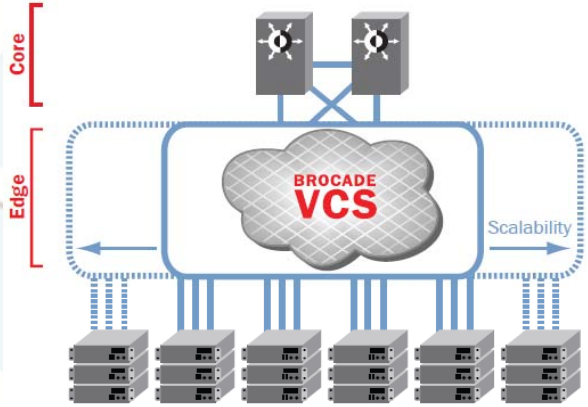
Servers with 10 Gbps Connections

Hybrid Ethernet Fabric Architecture



Servers with 1 and 10Gbps Connections

Ethernet Fabric Architecture



Servers with 10 Gbps Connections

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BROCADE

VIRTUAL MOBILITY

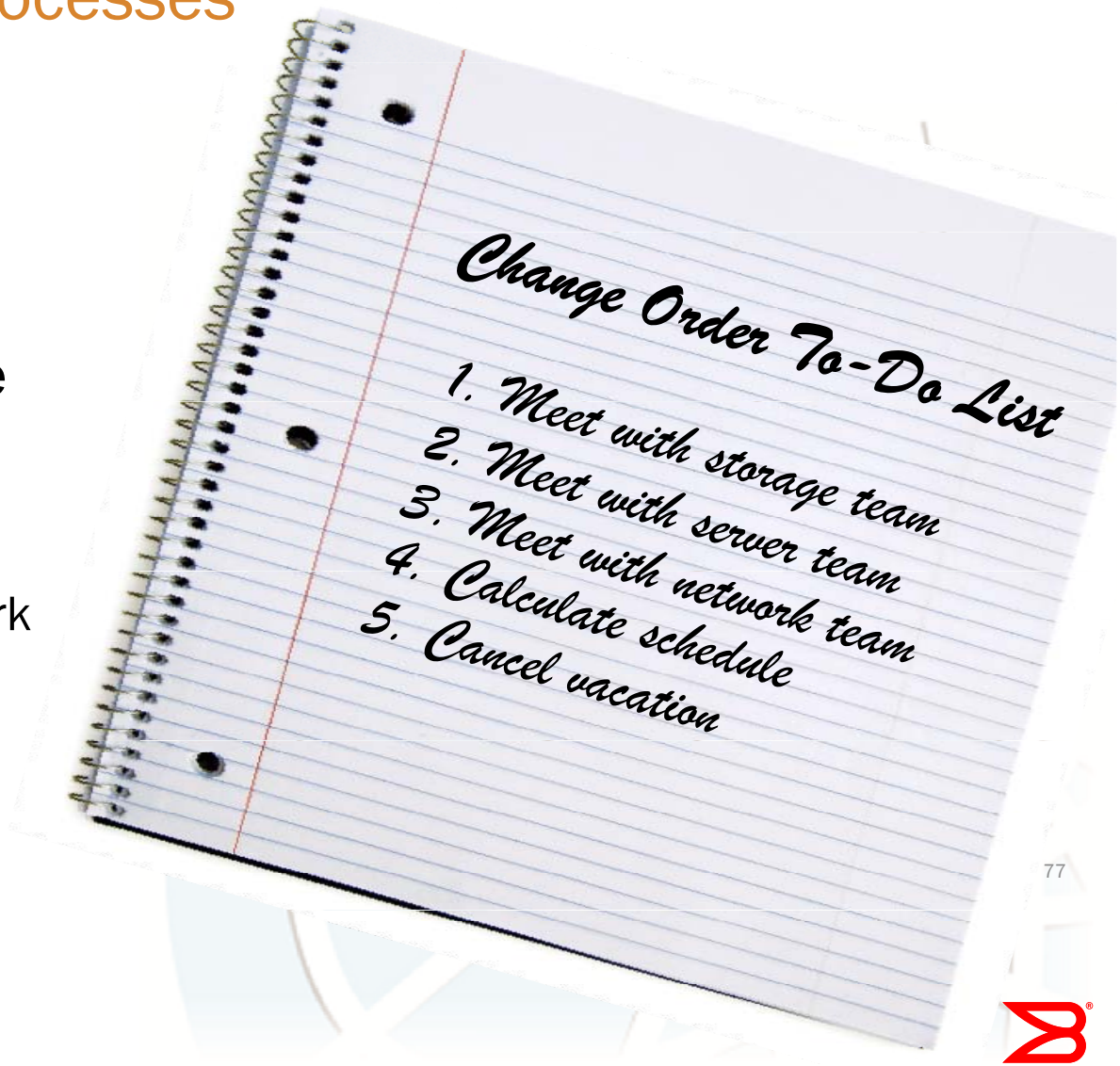
Automatic Migration Port Profiles Demo

Challenges of Migrating Virtual Machines

Too Many Manual Processes

Solution: Virtualize the Network

- A more resilient network
- A more responsive network
- A more reliable network


Change Order To-Do List
1. Meet with storage team
2. Meet with server team
3. Meet with network team
4. Calculate schedule
5. Cancel vacation

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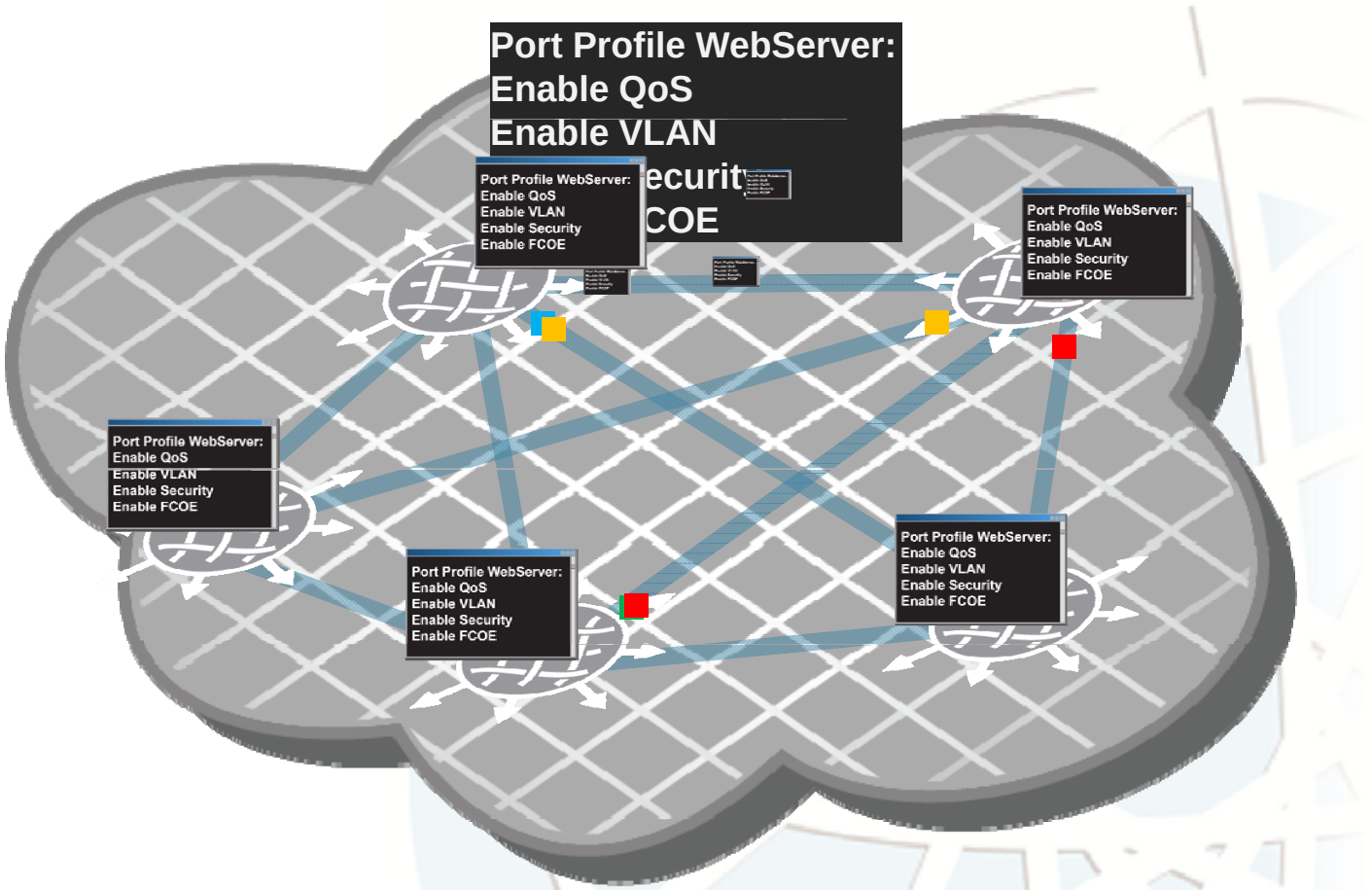
Sharing Port Profiles

Automatic Sharing to simplify management



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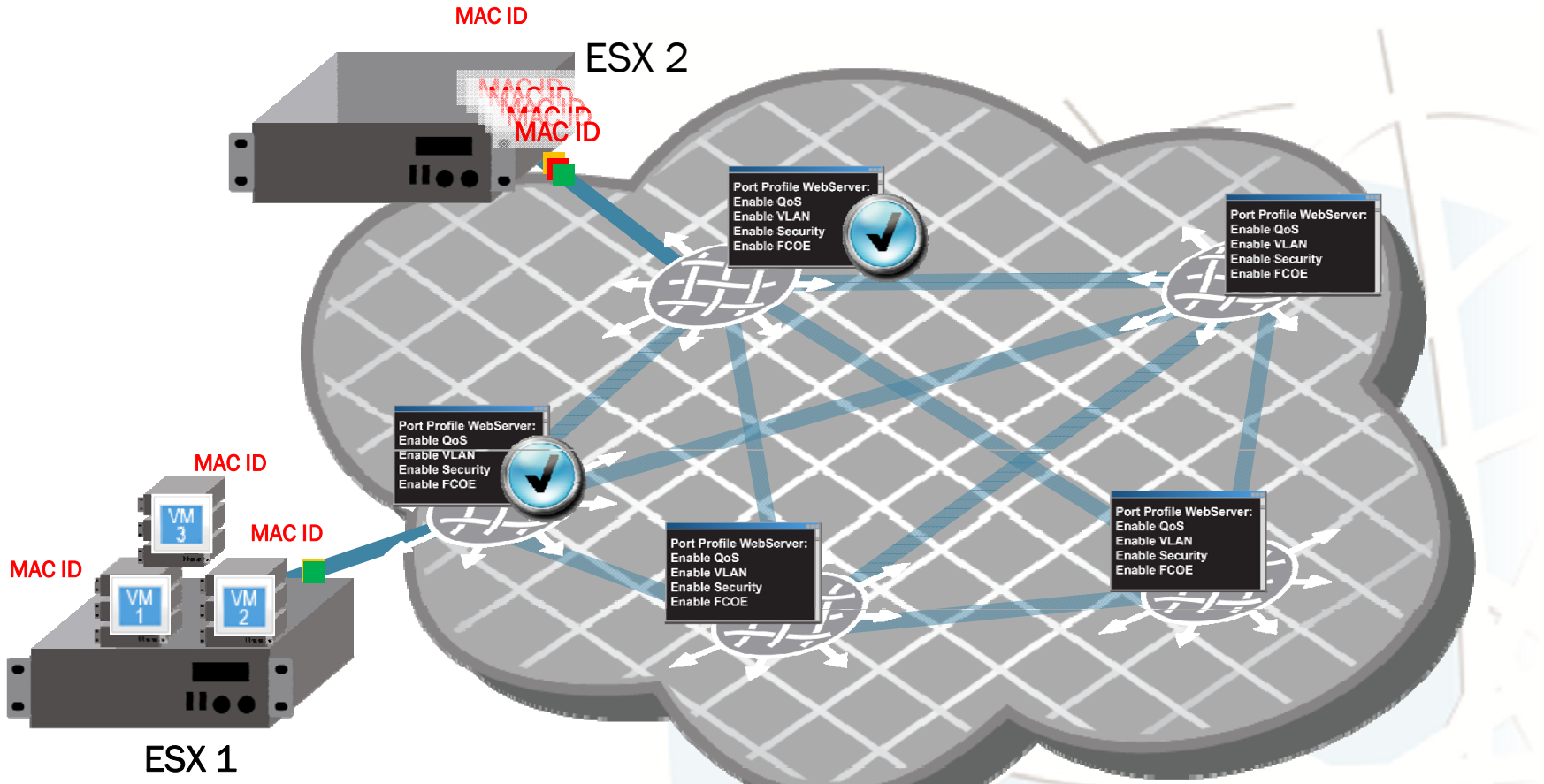
Simplified Virtual Machine Migration

Automatic Migration of Port Profiles



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HYPERVISOR AGNOSTIC

Your Hypervisor Choice Supported

How many of these do you have running?

a) VMware Hypervisor
b) Microsoft Hyper-V
c) Oracle Hypervisor
d) Citrix Xen
e) Open-source Xen
f) Open-source KVM

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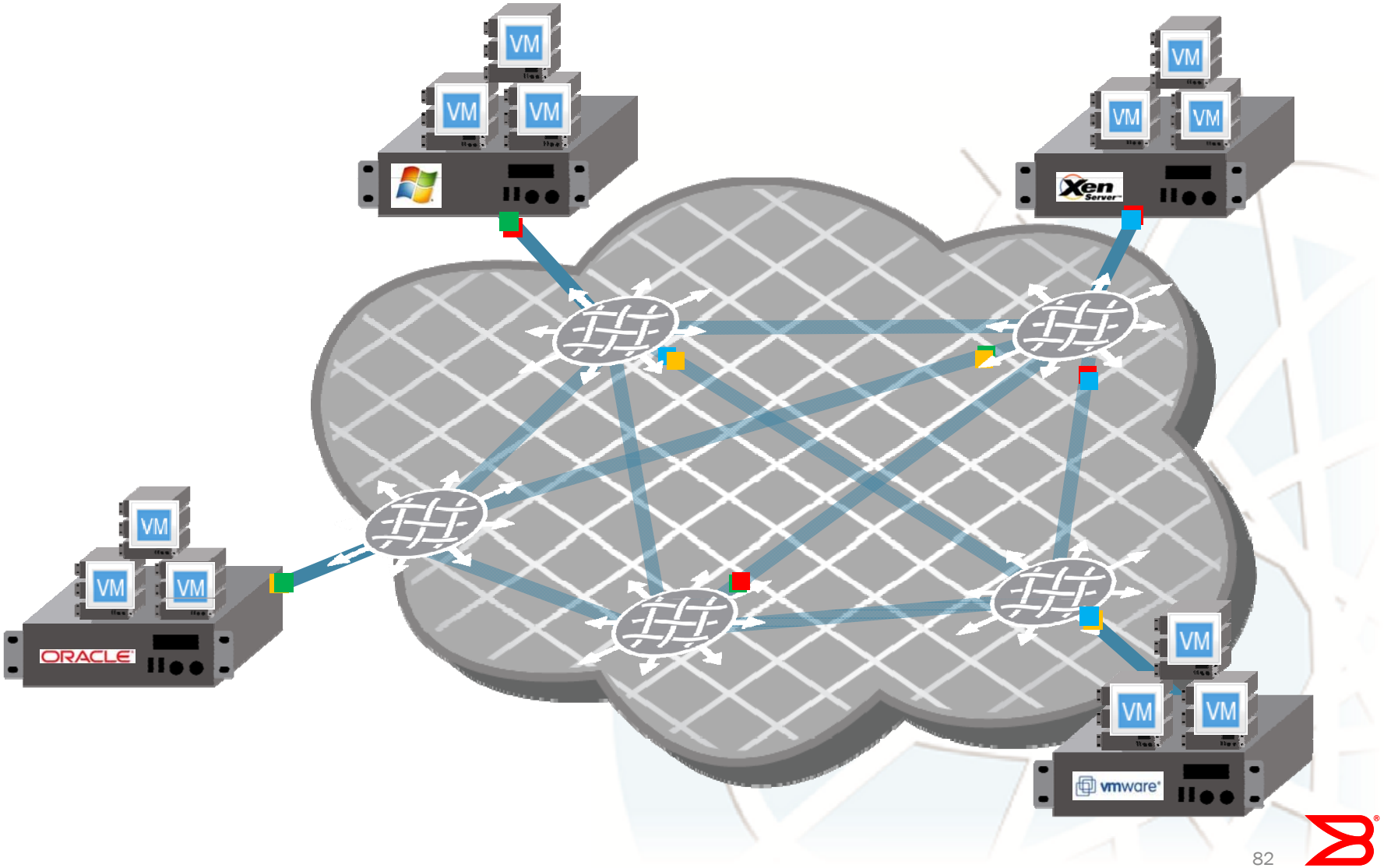
Hypervisor Agnostic

Tied only to VM MAC Addresses



Simplification Rules

- Coordination between IT staffers: *Simpler*
- Performance: *Better*
- IT response time: *Faster*
- Seasonal demand accommodated: *More Easily*
- Servers consolidated: *Quicker*

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